Paper TRADE JOURNAL

May 11, 1951

WHAT ARE THE ADVANTAGES OF CORRUGATED CARTONS FOR CITRUS FRUIT? . . . SEE PAGE 22

HOW CAN THE LIFE OF FELT CONDITIONERS BE PROLONGED? . . . SEE PAGE 28

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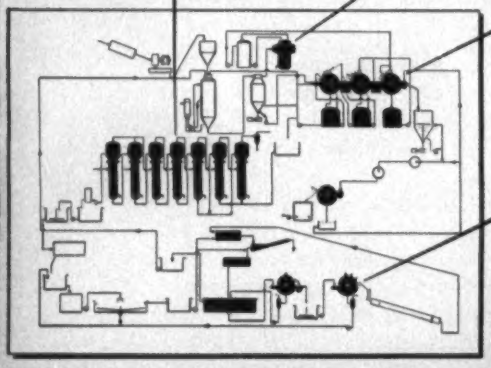

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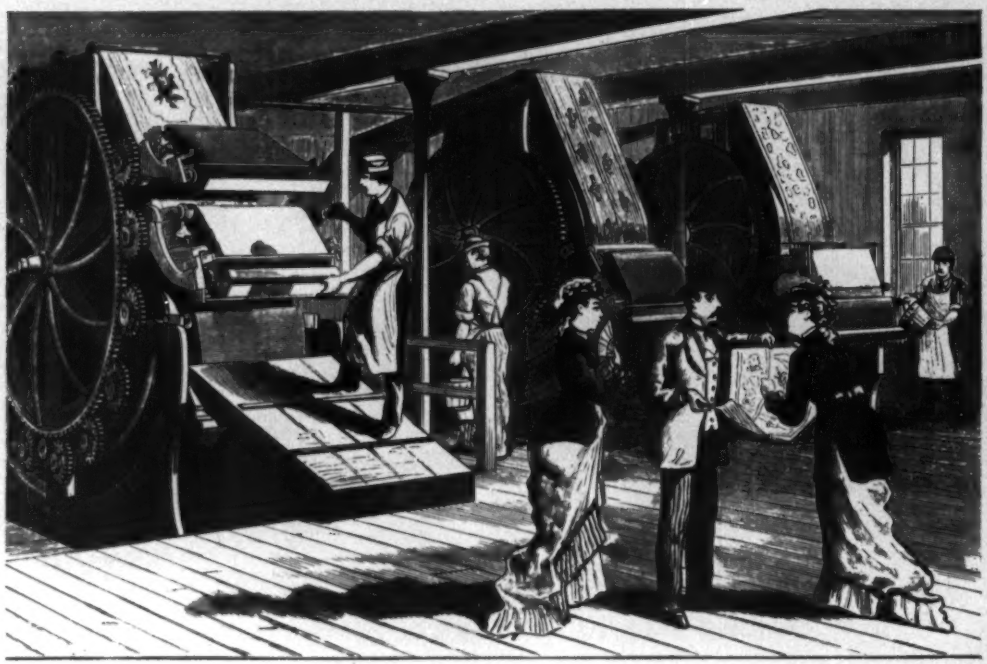

Illustration from the Bettmann Archive

Revolution in Wall Paper

First to make paper, the Chinese were also the first to make wall paper, hand painting small squares for decorating interiors. Dutch traders brought the idea to Europe, where designs were first applied by stencil. Late in the 17th Century Papillon in France introduced a process of printing paper squares and panels in elaborate design from engraved plates.

First made in the United States in 1750, wall paper continued to be produced in small sections by hand stencil and engraving. Then with the coming of volume paper production in the mid '60's the first machines were invented for printing wall paper in rolls.

Today modern high speed machines turn out millions of rolls of wall paper each year in infinite varieties of color and design. Through the enterprise of the pulp and paper industry and the resourcefulness of modern printing, the home decoration that was once the proud privilege of the rich has become available to every home in the land.

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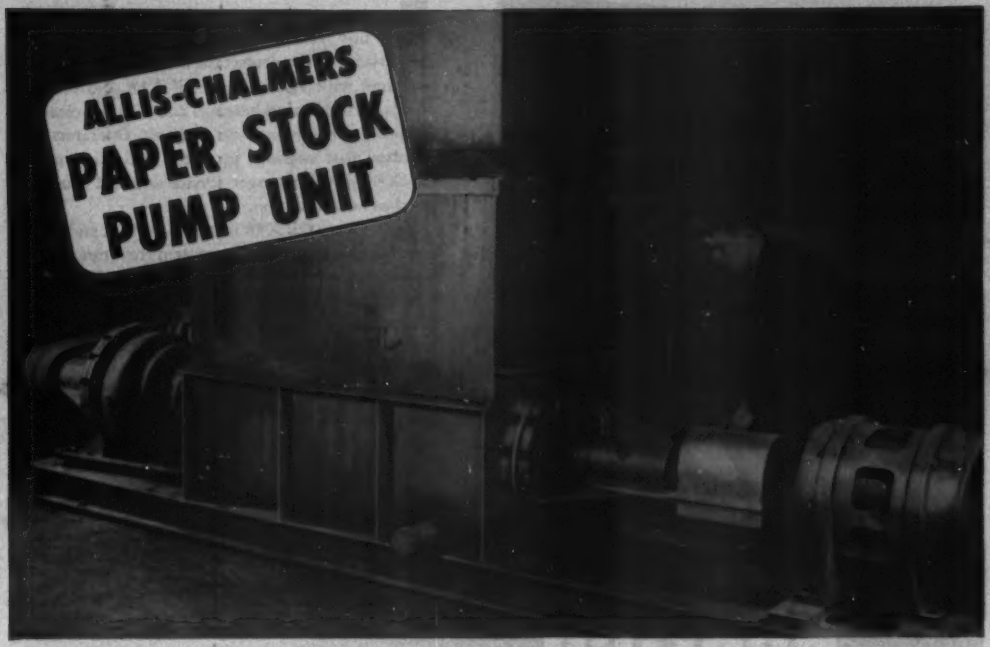

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Paper TRADE JOURNAL

ABP

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NEXT WEEK

Characteristics required to give satisfactory service and long life of pumps are covered in "Recent Developments in Pump Maintenance" by Erik G. Landberg.

Drying efficiency and web compacting ability of the Yankee dryer are explained in "The Yankee Machine for Dry or Semi-Creped Tissue" by L. R. Adkins, Chief Chemist, Pond's Extract Co.

REMEMBER THESE DATES

MAY 13-16: American Institute of Chemical Engineers, Regional Meeting, Hotel Muehlebach, Kansas City, Mo.

MAY 25: The Miami Valley Div., of the American Pulp & Paper Mill Supts. Ass'n., meeting at the plant of the Orr Felt and Blanket Co., Piqua, Ohio.

JUNE 3-6: National Paper Box Mfrs. Assn., Haddon-Hall, Atlantic City, N. J.

JUNE 18-22: American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

JUNE 22-23: Maine-New Hampshire Section of TAPPI, meeting to be held at the Eastern Slope Inn at North Conway, N. H.

JUNE 24-28: American Pulp & Paper Mill Supts. Ass'n. National Convention, to be held at the Multnomah Hotel, Portland, Oregon.

JUNE 27-30: Empire State TAPPI, meeting at the White Face Inn, Lake Placid, N. Y.

SEPT. 16-19: American Institute of Chemical Engineers, Regional Meeting, French Lick, Ind.

OCT. 10-12: American Pulp & Paper Mill Superintendents Assn., Southern and Southeastern Div'n., George Washington Hotel, Jacksonville, Fla.

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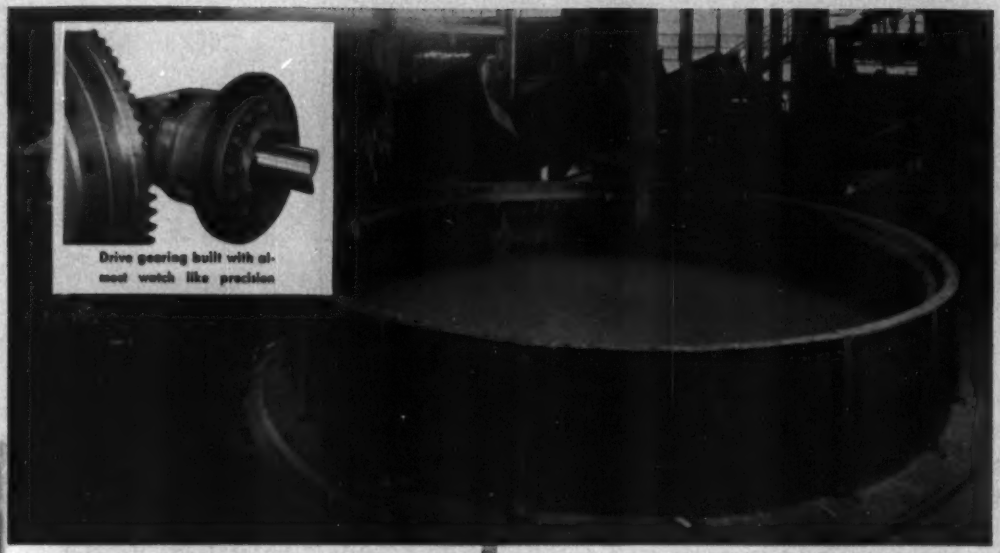

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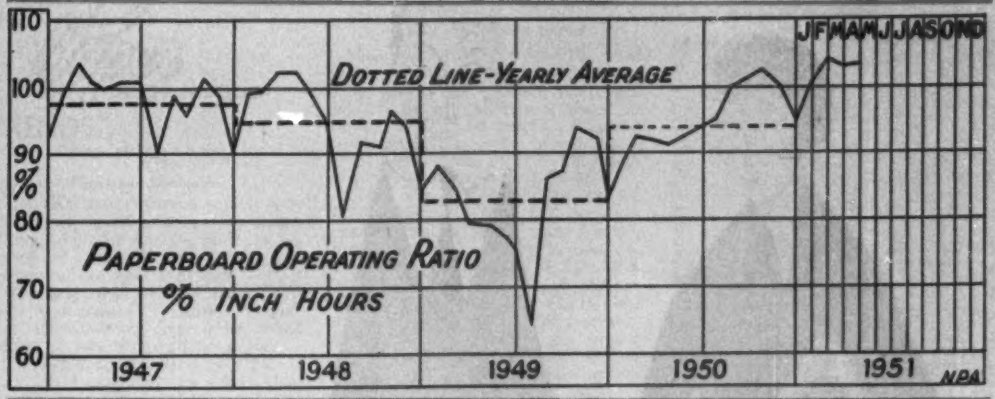
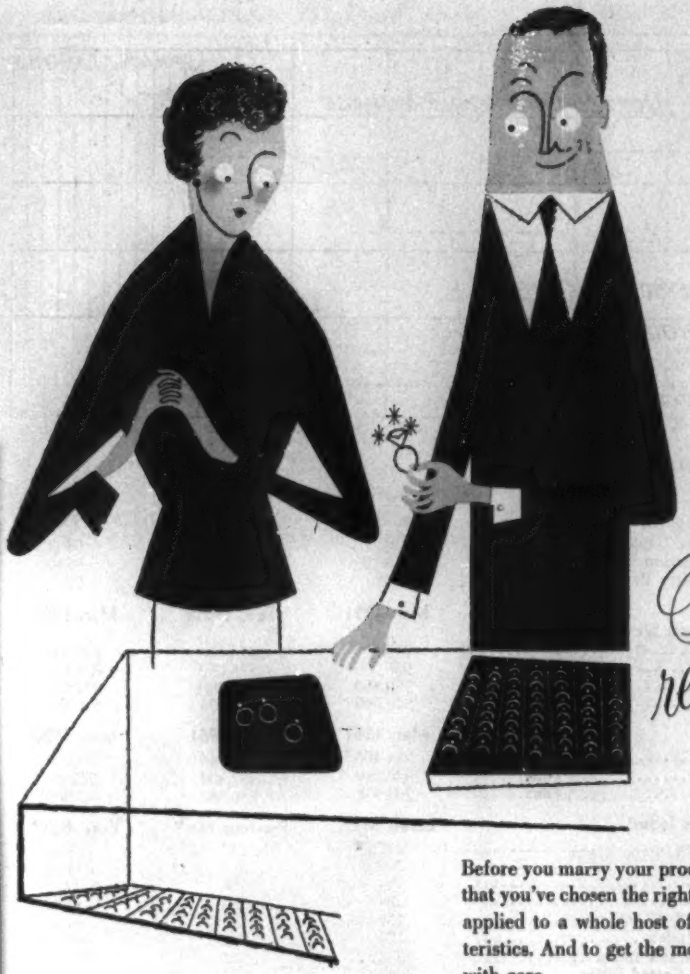


Weekly Brief of Important Figures

Source	Production	WEEK ENDING Apr. 28, '51	Mar. 31, '51	Apr. 29, '50
APPA	Paper Production Percent Capacity[3]	101.0	101.3	95.6
	Unbl. Kraft Paper Production Percent	89.0	94.0	95.8
NPA	Paperboard Operating Ratio Percent Inch Hours	105	98	92
		Mar. 1951	**Feb. 1951x**	**Mar. 1950**
APPA	Paper Production[6] (Except Newsprint and Building Papers) ...Tons	913,000	818,628	837,187
	New Orders ...Tons	958,000	816,052	854,627
	Unfilled Orders ...Tons	980,880	938,390	532,750
	Shipments ...Tons	916,000	810,035	840,905
		Mar. 1951	**Feb. 1951**	**Mar. 1950**
NPA	Paperboard Production ...Tons	984,405	977,946	908,600
	New Orders ...Tons	946,819	987,609	952,600
	Unfilled Orders ...Tons	704,936	758,562	371,800
	Our Customers Activities Index[1]	**Latest Mo.[6]**	**Previous Mo.[6]**	**Year Ago[6]**
FRS	Manufactures Total Index	227	227	188
	Durable Mfg. Index	269	265	204
	Nondurable Mfg. Index	194	196	176
	Chemical Products Index	288	288	250
	Mfg. Food Products Index	151	155	146
	Printing and Publishing Index	174	165	166
ODC	Magazine Advg.-Printer's Ink Index	344	347	330
	Retail Sales Combined Adjusted Index	353.1	366.9	306.0
	Drug Index	233.7	234.0	220.7
	General Merchandise Group Index	347.5	376.1	297.0
	Grocery and Combination Index	427.6	421.8	368.3
	Prices Index			
BLS	Consumers Price Index[1]	183.[illegible]	181.5	167.9
	Wholesale all Commodities[2]	183.6	180.1	152.7
	Wholesale Foods[2]	187.7	182.3	156.7
	Commodities other than Farm Products and Foods[2]	171.8	170.3	145.9
	Wholesale Pulp and Paper[2]	196.5	196.5	155.6
	Purchasing Power of Dollar, Consumers Prices[1]	54.4	55.1	59.6
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	424.9	423.3	330.0
	Unemployment Compensation Initial Claims (M)	770	1,080	1,240
	Miscellaneous Carloadings–Thousands of Cars	1,373	1,498	1,296
	Electric Output (Million KW hr.)	33,102	36,726	28,789
PTJ	Average 32 P & P Common Stocks as of May 1	$39.59	$37.09	$33.08
	Average Indicated Dividends Common Stocks as of May 1	2.54	2.34	2.29

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
[3] New 6-7 day basis.
[6] For details see APPA Monthly Statistical Summary—March 1951 Estimated Figures
[6] Latest Month Available on Request
x Revised figures.



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Paper Trade Journal

TRENDS

Office of the Paper Trade Journal, Wednesday, May 9, 1951.

Regulation Confusion

For all practical purposes, price conditions can be divided into three stages, Price Administrator Di Salle is reported to have said: "Confusion, less confusion, and light confusion."

The first week of May might well have been named "Confusion Week." One after another price order rolled off the presses at breathtaking pace.

Following on the heels of CPR 22 came SR 1 extending the cut-off date for imported pulpwood and woodpulp. The long-awaited Import Regulation, CPR 31, effective May 9, came next. Okayed were increases in acquisition costs and pre-Korean dollar and cents markup. Woodpulps, however, were exempt from the order.

CPR 22, Amendment No. 1, designates code numbers to be used by various categories of products when a manufacturer proposes to increase his prices. CPR, SR 2, is an alternative method for determining ceiling prices, tailored specially for multi-product companies.

Another major order released was the pricing regulation for machinery.

CPR 22 set ceiling prices for new cotton cuttings.

CMP regulations 1 and 3 also made their appearance, explaining how production schedules of controlled materials will be authorized and how allotments will be made. (Regulations 2 and 4 covering inventories and distribution are understood to be on the way.)

Released also was Direction 2, NPA Reg. 4, an MRO Export Order which is designed to enable exporters to acquire replacements for export. Excluded are paper and paper products, paperboard and products, woodpulp and waste paper. (New cotton cuttings were earlier placed on the Positive List by the Export Control Section of OIT.)

Wood Pulp Ceiling Order??

At long last, the importers pricing order was released. Since it exempted wood pulp, it is concluded that the woodpulp ceiling order is coming soon.

While OPS has been deliberating, the Swedish mills have decided that "American price stop regulations are obviously not preventing increases of prices for raw materials, e.g. pulp purchased direct from abroad. The authorities are, for instance, said to have approved the increase by $50 per short ton recently fixed by the Finnish cellulose mills for their shipments in the second quarter. . . . The question of fixing the prices in the American contracts has thus become a difficult problem to the Swedish producers," writes the *Swedish Wood Pulp Journal*.

May-June Pulp Prices Named

May-June prices for Swedish wood pulps were named last week by those mills which had quoted "For April only." The new quotations were $25 higher than April prices. Bleached grades at $275 are thus brought close to the higher range of $290. Unbleached range now stands at $250/$265.

U. S. consumer resistance to the $100 advances in price had been expected, Swedish agents say. Instead, there developed a scurry to take offered tonnages at highs of $275/$290 and up, at contract levels. Spots are much higher, ceiling unknown. In view of such conditions, Swedish representatives are obligated to get higher prices for their principals, though these are still below the highs of the range by an average of $15.

In his periodic review of the national pulp situation, Lawson P. Turcotte, president, Puget Sound Pulp and Timber Co., noted that "consumers' inventories are declining, and present demand is such that the Scandinavian product is finding sale in the U. S. at prices substantially higher than those charged by domestic producers."

Swedish agents charge that U. S. pulp producers are cutting contract tonnages to their customers and selling appreciable tonnages on the spot market at prices higher than Swedish highs. *Paper Trade Journal* will be glad to publish rebuttals to these charges.

An undertone of softness in groundwood pulps is marked, dealers report. Though second quarter prices for Canadian grades are $95/$100 f.o.b. mill, going prices are closer to $80/$85, it is said.

Waste Paper Prices Dip Again

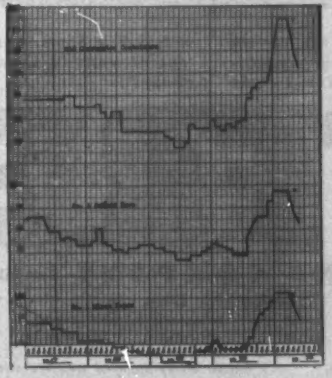
One price order which OPS had reported was on its way three months ago is mostly outdated. Its value now would be to set ceiling on substitute grades of sulfites and krafts which are frozen to the January 25 levels.

Meanwhile the market has responded to heavy supplies in most low grades and an easier demand. Old corrugated is said to be holding at current levels. Book grades have taken major drops.

From the higher prices for pulp substitutes being reported, it is evident that "deals" are being arranged. On such a market, deals are a known secret, it is said.

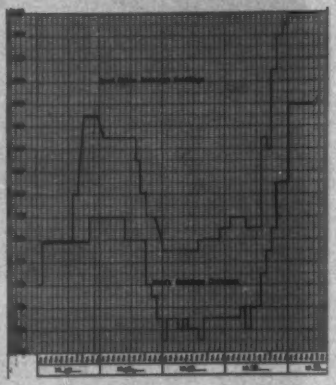
For a study of the tremendous rises and dips which characterize the waste paper market, a study of the graphs is suggested.

Trend of Waste Paper Prices
N. Y. Market
Low Bulky Grades



*Prices frozen 1/25/51.

Trend of Waste Paper Prices
N. Y. Market
Representative Pulp Substitutes



*Price frozen 1/25/51.

New Cottons Get Ceiling Prices

Effective May 7, ceiling prices are set for 87 grades of new cotton cuttings. To the prices of 10.01c and above is to be added 7½ percent dealer commission, if bought through a dealer, and 10 percent when ceiling is 10c or lower. For the time being, export shipments are not exempt.

Dealers are not very happy about the order because of its untimely release. In the opinion of established dealers, the market was already showing signs of weakening in sympathy with other raw materials, notably waste paper and excepting wood pulps, and a supply-demand balance was seen developing. Lacking OPS policing personnel the order will not mean a rollback but only a means of subterfuge tie-in sales which create a "chiselers' market." The ruling is fair but now unnecessary, it is said.

—E. P. N.

Paperboard Production (Tons)*

	Apr. 28 1951	Apr. 21 1951	Apr. 28 1950	Month of April
Production	248,326	256,538	208,056	1,006,972
New Orders	202,342	225,583	200,061	956,085
Unfilled Orders	646,878	694,218	343,709	646,878

* Source: NPA.

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- Re-chippers
- Barge Unloaders
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The following reductions are the results of nine months tariff negotiations between the GATT countries:

Leather board: compressed leather, counter board, solid fiber shoe board—not processed—7½%—Canada.

Filter Masse or filter stock—15%—Germany.

Tissue and paper similar to tissue including India and bible papers, valued at not more than 15c a lb., weighing not over 6 lbs. to the ream—1½c per bl. plus 5%—Norway.

Weighing over 6 and less than 10 lbs.—1¼c per lb. plus 3¼%—Sweden.

Surface coated paper; embossed or printed; not lithographically—2½c per lb., plus 10%—Canada.

Covered with metal or its solutions—2½c per lb., plus 10%—Germany.

Covered with metal or its solutions and weighing less than 15 lbs. per ream—2½c per lb., plus 10%—Germany.

Uncoated papers; decorated or covered with design; wrapping paper—2½c per lb., plus 10%—Benelux.

Other papers—2½c per lb., plus 10%—Germany.

Gummed papers not specially provided for—2½c per lb.—Canada.

Printed matter other than lithographed, composed of surfaced coated and other papers dutiable—2½c per lb., plus 10%—France.

Boxes of paper; papier-mache or wood, covered or lined with surface coated, parchment, lithographed or similar papers—2½c per lb., plus 5%—France.

Lined with cotton or other fiber floc—2½c per lb., plus 10%—France.

Unsensitized photographic papers; basic or baryta coated—2½%—Germany.

Drawing paper and similar paper; ruled, bordered, etc. —1½c per lb., plus 7½%—Germany.

Sheets of writing, letter and note paper with gummed edge or perforated for use as combination sheet and envelope—20%—France.

Hanging paper, not printed, lithographed or colored—5%—Canada.

Pulp board in rolls for wall board, surface stained, lined or plate finished—7½%—Canada.

Stereotype Matrix Mat or board—20%—Germany.

Cigarette paper except cork paper in bobbins—22½% —France.

Flat—22½%—France.

Block, Cigarette book and book cover—22½%—France.

The Commonwealth Nations refused to give up Empire Preference so that reductions were not possible in many items. The "Most Favored Nations" clause, however, will operate even though no direct negotiations were made, thus Canada will reap benefits negotiated with Sweden and vice versa.

These tariff negotiations were carried on by the State Department. The American Paper and Pulp Assn. and many manufacturers and unions opposed any further reduction in tariff at this time.

Westvaco Completes Half Program

On May 6th West Virginia's Covington mill completed half of its projected modernization program. The new hardwood woodyard and the continuous semi-chemical pulping plant went into operation for the first time. The overall objective of the modernization program is to complete two straight line pulping operations. One for pine the other for hardwood pulps.

The new hardwood woodyard is a major engineering undertaking and consists of a new mile long roadloop, quarter mile flume to convey wood from the trucks as well as wood storage yard to the barker. This conveyor is designed for capacity of 800 cords of hardwood per day. Circulation is maintained by a 14,000 GPM pump.

Wood is fed directly to the barking drums each with a capacity of 400 cords per day. New sorting platforms have also been provided. From the barking drums the clean logs drop onto a new rubber belt conveyor some 800 feet long for delivery to the new consolidated chip house where chippers, screens and storage bins for both pine and hardwood have been located.

The old conventional chip bins above the digesters have been eliminated and new cylindrical steel bins have been built at ground level. Bins have sufficient capacity to supply the mill for 15 hours and triple the old system.

All controls for the operation of delivering chips from the bins to the digesters will be operated automatically from the pulp mill. All operations in the woodyard conveying system will be controlled from a high tower giving the operator full view of the woodyard.

While modernization of the chemical pulping operations will come as a later development, the new semi-chemical unit to produce pulp for nine point corrugating board is going into operation at this time. It is a continuous cooking process using hardwood, coupled with a hot refiner system using two Sutherland refiners ahead of the vacuum washers. The system is designed to eliminate much of the weak liquor discharge into the river.

It is expected that these and other improvements projected to be completed in 1952 will put the Covington plant into the competitive situation which it so long occupied in the industry and to improve efficiency by better wood utilization.

Northern's No. 5 in Production

Northern Paper Mills, Green Bay, Wis., reports that its new Beloit Yankee machine is in operation. Designed for a maximum machine speed of 2000 feet per minute it is swiftly approaching its planned average speed of 1650 feet per minute. It has a 172 inch wire designed for a 162 inch trim. The Yankee dryer is 12 feet in diameter and designed for 125 p.s.i. steam pressure.

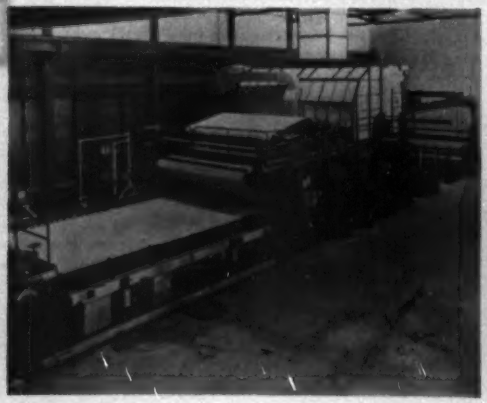
This new "No. 5" paper machine is housed in a completely new and modern plant adjoining the regular mill. This building is three stories in height, 505 x 100 feet, constructed of structural steel, with a red brick exterior. Solid rows of glass block windows extend like a belt around the outside walls. The interior is lined with straw colored glazed tile.

Mr. H. W. Gochnauer, Northern's chief Engineer, and his staff directed the erection of the new building in which the machine is housed and also the actual installation of the machine itself.

The building is divided into three sections; one for office and storage space and for stock preparation—the machine room to house the new machine with space provided for a possible future machine—and finally the converting, storage and shipping section. New converting machinery has already been installed.

All new building sections incorporate improved ventilation systems and other factors that make for efficient, safe and pleasant working conditions.

Northern's New Fourdrinier



Building Housing the New Machine

NOW, WHEN GOOD PAPERMAKING STOCK IS WORTH A LOT OF MONEY

Here is a money making machine you cannot afford to be without —

The BIRD SAVE-ALL

Ask us for layouts and estimates on a modern, closed white water system that will prevent all of those valuable fibres from going down the drain.

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

The "Corinthia," a 70 foot towboat, is shown coming up the narrow Blackwater River in Southeastern Virginia towing 3 barges loaded with pulpwood for the Camp Manufacturing Co. The craft is powered by a Quad-6 (four 6-cylinder General Motors Diesel engines) driving a single shaft. The Corinthia's skipper is in constant touch with the plant by radio telephone.

German Import Licenses Granted During February

Vereinigte Glanzstoff-Fabriken A.G., Wuppertal-Elberfeld/Westfalen (dissolving pulp)...	$670,000.00
Dynamit-Actien-Gesellschaft, Troisdorf/Bezirk Köln (Rheinland) (dissolving pulp)	32,249.00
Farbenfabriken Bayer, Leverkusen (Nordrhein-Westfalen (dissolving pulp)	50,600.00
Papierfabrik Kirchberg, Krieger, Meuser & Co., Kirchberg bei Jülich/Rheinland (sulphate pulp)	212,450.00
Natronzellstoff- und Papier-fabriken A.G., Ober am Harz/Niedersachsen (suplhate pulp)	228,300.00
Papierfabrik Hermes & Cie. K.G., Düsseldorf (Nordrhein-Westfalen) Fringestrasse 15-17 (sulphate pulp)	17,910.00
Papierfabrik Jagenberg G.m.b.H., Düsseldorf-Reisholz (Nordrhein-Westfalen) (sulphate pulp)	24,800.00
Carl Eichhorn Erben, Papierfabrik G. m. b. H., Kirchberg bei Jülich/Rheinland (sulphate pulp)	115,750.00
Veireinigte Glanzstoff-Fabriken A.G., Wuppertal-Eberfeld/Westfalen (dissolving pulp) .. Dynamit-Actien-Gesellschaft, Troisdorf/Bezirk, Köln (Rheinland) (dissolving pulp) .. Farbenfabriken Bayer, Leverkusen (Westfalen) (dissolving pulp)	lt. Meldung v.2.3.1951
Peter Temming A.G., Glückstadt/Holstein (dissolving pulp)	43,000.00
Presspanfabrik Chr. Authenrieth, Stuttgart/Württemberg (sulphate pulp)	18,600.00
Herzbergrr Papierfabrik, L. Osthushenrich GmbH., Herzberg/Harz (sulphate pulp)....	228,200.00
Papierfabrik Kappelrodeck, Richard Lenk GmbH., Kappelrodeck/Baden (sulphate pulp)..	24,800.00
Papierfarik Scheufelen GmbH., Overlenningen/Württemberg (sulphate pulp)	12,400.00
Farbenfabriken Bayer, Leverkusen (Westfalen) (dissolving pulp)	308,600.00
Veireinigte Glanzstoff-Fabriken A.G., Wuppertal-Elberfeld (Westfalen) (dissolving pulp)	138,915.00
Friedrich Erfurt & Sohn, Papierfabrik, Wuppertal-Beyenburg (Westfalen) (sulphate pulp)	12,400.00

INVITE PRIVATE INVESTORS

WELLINGTON, N. Z. — The New Zealand government has opened world-wide bidding for its big $86,800,000 paper and pulp enterprise, including the world's largest man-made pine forest near Rotorua, the Yellowstone park of New Zealand.

The government announcement said private investors from any part of the world are invited to bid in the auction. The bidding closes November 1.

CONTINENTAL'S NEW MACHINE

Continental Can Co., Hopewell, Va., has placed its new machine order with Bagley & Sewall Co. The machine has a 270" wire for 250" trim. Designed for 1500' per minute, it will have a capacity of 600 tons per day of liner board. There will be 118 five foot dryers. Delivery is expected late in 1952.

NEW DALLAS BOX PLANT

DALLAS — A modern $600,000 container plant is now under construction in Dallas by National Container Corp. as a result of the accelerating manufacturing activity necessitating additional packaging production in which to ship the growing number of products being made in the Southwest.

The Dallas plant will be the most modern in the company's entire operation. Into its anticipated 100,000 square feet of working space will go the most modern box making equipment being manufactured today.

FRENCH STUDY OUR PRODUCTION

WASHINGTON, D. C.—Crediting high American productivity as the reason why U. S.-made paper products are substantially cheaper than those of France, a group of French paper and paperboard executives, technicians and workers is in this country studying our methods. They were brought here by the ECA.

The group was said to be particularly interested in observing methods developed here in World War II for processing certain less-suitable woods and materials, in view of dwindling supplies of high-grade pulpwood. The French industry, it was reported, is feeling the full brunt of a world-wide scarcity of softwood pulpwoods that has existed since the war, and has become more acute in recent years.

French paper makers have begun use of straw and such hardwoods as chestnut, poplar and beech, and plan to expand use of such woods as a partial substitute for softwood imports from Russia. They have undertaken large-scale use of esparto, and are hopeful that some American experience in using such woods as gum and poplar may be helpful.

However, they are especially interested in the fact that while raw material prices for the industry are virtually the same all over the world, our products are so much cheaper than the French papers, and they believe our production rate is the answer.

Here since April 16, their itinerary for the remainder of the visit after completing surveys at the Mead Co., Lynchburg, Va., and Continental Paper Co., Ridgefield Park, N. J., will include a number of companies in Maine — Oxford Paper Co., St. Croix Paper Co., Great Northern, Hollingsworth & Whitney, and St. Regis' Buckport mill; Robert Gair Co., Tonowanda, N. Y.; River Raisin Paper Co., Monroe, Mich.; Detroit Sulphite Co.; Thilmany Pulp & Paper Co., Kaukauna, Wis.; Institute of Paper Chemistry, Appleton, Wis.; and Hammermill Paper Co., Erie, Pa.

Interesting Facts about Paper

Largest single purchaser of paper in the world is the U. S. Government Printing Office. Delivery averages the equivalent of 16 carloads daily.

interesting facts about CHRYSOIDINE Y DUSTLESS

CHRYSOIDINE Y DUSTLESS is a popular basic orange, extensively used in coloring kraft, tissue, boxboard, poster, news, ground wood, and catalog papers. It dyes both sized and unsized papers and gives excellent results when used on unbleached fibers.

Your Calco representative will be glad to supply full information on CHRYSOIDINE Y DUSTLESS and the many other colors in the Calco line.

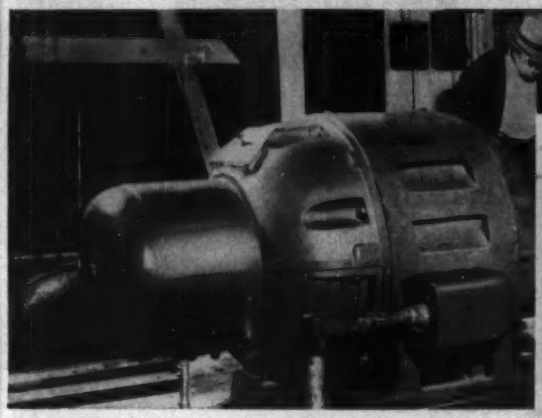
Calco®

AMERICAN *Cyanamid* COMPANY
CALCO CHEMICAL DIVISION
DYESTUFF DEPARTMENT
BOUND BROOK, NEW JERSEY

New York · Chicago · Boston · Philadelphia · Charlotte · Providence

DEPENDABILITY where it counts

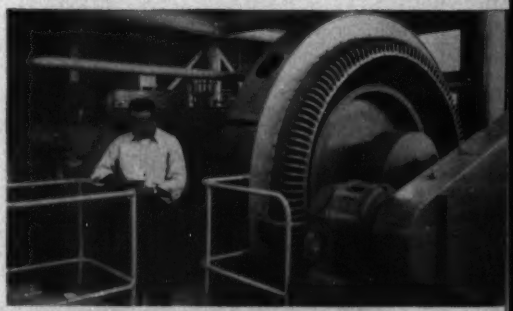
SYNCHRONOUS MOTORS



Dependability and long life are a must in water-pumping equipment. Cohoes, N. Y. selected a G-E Tri-Clad* 500-hp synchronous motor for their raw-water pumping station. And as protection against a short-circuit capacity of 60,000 kva, Cohoes selected G-E Limitamp high-voltage control. Besides providing accurate control for the motor, Limitamp clears shorts from the line in less than half a cycle—before damage can come to either motor or control. Ask your nearest G-E sales office for more information on Limitamp control.

* Reg. U. S. Pat. Off.

ON CRITICAL PUMPING OPERATIONS



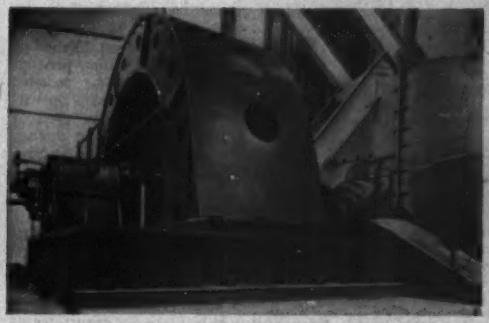
Driving compressors in gas pumping station serving hundreds of homes, motor requirements were—dependability and low cost. This G-E 1500-hp synchronous motor scores on both counts.

FOR SPECIAL SERVICE CONDITIONS

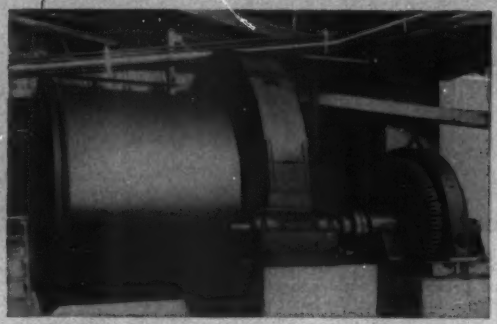
Corrosive, dust-laden atmosphere has no effect on this externally ventilated synchronous motor. Installed in a plastics mill, it's typical of the special enclosures that can be designed to meet almost any operating problem.

These gas compressors created a hazardous atmosphere for motor operation. The external enclosure of this 300-hp, G-E synchronous motor is filled with an inert gas to provide reliable operation.

FOR TOUGH JOBS



A motor must be rugged to drive a large wood chipper capable of chewing 40-inch diameter logs into small pieces. This G-E synchronous motor, with rigid, box-type construction will give years of dependable service—on a tough application.



To meet the rough test of driving a ball mill, this mining company chose a G-E high-torque synchronous motor rated at 600 hp. It's given them years of dependable operation and still going strong.

SAVE MONEY, TOO

It's a fact . . .

Lower Operating Costs,
higher operating efficiency.

Lower Initial Cost
including control and exciter—for many ratings.

Reduced Demand
and release of needed generating capacity.

Reduced Power Rates
for improved power factor.

Application engineers, with many years of field experience, will tailor G-E synchronous motors and control to *your* job. And, no matter where you are located, there's a G-E Service Shop near you.

For your next large, synchronous motor application, call in your General Electric representative—he'll be glad to discuss with you, your particular application. For more information on G-E synchronous motors, write for GEA-5332 (low-speed) or GEA-5426 (High-speed) to: *Section 770-24, General Electric Company, Schenectady 5, New York.*

You can put your confidence in—

GENERAL ELECTRIC

770-24

GOVERNMENT GOSPEL

Amendment to M-32-Chemicals

Added to schedule A is ethyl cellulose acceptance up to 40 percent by weight of producer's scheduled production; melamine and compounds, no limitation of acceptance; carbon tetrachloride, no limitation of acceptance. Lead time on these items is 15 days for producers.

CPR 31-Import Regulation

Woodpulp is exempt, paper is not. Current acquisition costs are allowed. Mark up by importers and wholesalers is frozen at July 1, 1949-June 30, 1951, dollar and cents value.

CPR 30-Machinery Ceilings

This is very similar to CPR 22 in the methods of calculation. Certain labor items such as engineering, erection and field service can be added to direct labor costs.

CPR 28-New Cotton Cuttings

Specific ceilings are set on delivered mill basis. Order allows dealers commission to be added; 7½ percent on prices of $10.01 and 10 percent on prices less than $10 per cwt. See *Prices* page for grades and ceilings.

CMP Preliminary Regulations

WASHINGTON, D. C.—The Controlled Materials Plan has launched a number of preliminary actions, including two regulations to set the basic pattern for operation of the plan.

These orders, CMP Regulations 1 and 3, outline steps to be taken by the affected manufacturers before July 1. Regulation 2, covering inventories, and 4, covering distributors, are still to be issued but will be promulgated shortly.

Regulation 1 explains the production schedule authorization plan, and how controlled steel, copper, aluminum and other materials will be allocated; Regulation 3 establishes the relative preference status of delivery orders for controlled or other materials needed for production of defense or essential items.

During the past week, NPA began mailing copies of application forms to more than 50,000 manufacturers, for use in applying for controlled materials needed in production of specified goods in the third quarter.

Revised Report on Newsprint

The Tariff Commission has issued a revision of its War Changes in Industry Series Report No. 22 on Newsprint Paper.

The report points out that any great expansion of the newsprint industry in either the United States or Alaska is unlikely because of rising costs of production and the increasing demand for timber from other wood-consuming industries, as well as from other branches of the pulp and paper industry. In addition, the establishment of newsprint mills in Alaska is hindered by the cost of transporting construction materials, mill equipment, supplies, and personnel from the United States and by the distance of available mill sites from the markets for newsprint. It seems probable that Alaskan timber will be used for the production of lumber, pulp, or paper other than newsprint.

Freight Increase Not Included

WASHINGTON, D. C.—Freight increases authorized by Interstate Commerce Commission on March 12 may not be included in calculating manufacturers' increased transportation costs under the OPS' recent price ruling. It was pointed out that the ICC increases do not become effective until after March 15, the OPS cut-off date.

Discuss Price Regulations

WASHINGTON, D. C.—With a few changes the old OPA price regulation MPR 449 will cover their present needs, members of the Groundwood Specialty Paper industry advisory group told the OPS.

They suggested the feasibility of fixing dollars and cents ceilings on basic grades and weights of their products with differentials for variations and for different freight zones, also some changes in specifications to conform with new manufacturing and trade practices, and changes in freight zoning.

However, it was suggested to OPS that the industry be polled as to opinions on various details of the specifications and to bring the regulation up to date with respect to current practices. Members were not unanimous as to information the industry can furnish the government for use in computing new dollars and cents ceilings, however, they undertook to supply price lists in effect between January, 1949 and June 24, 1950.

They said it would be difficult or even impossible to make all the computations necessary to calculate their new ceilings under CPR 22, the Manufacturers General Ceiling Price Regulation, in time to meet the May 28 effective date.

Committee members include Lyman A. Beeman, president, Finch, Pruyn and Co.; E. J. Doonan, sales manager, Gould Paper Co.; Robert Faegre, Minnesota & Ontario Paper Co.; George H. Fay, vice-president, Mead Sales Corp.; Wayne A. Brown, Crown Zellerbach Corp.; Paul Mahony, sales manager, Groundwood Specialties Division, International Paper Co.; Fred W. Mears, Great Northern Paper Co.; and E. G. Murray, St. Regis Paper Co.

CMP Classification

According to Official CMP Class B Product List, Paper Industry machinery code is Product Class Code No. 35540—Industry Division PAPR— Industry description is GIEQ.

Proper Use of DO-97

DO-97 ratings—used in purchasing certain materials needed for maintenance, repair and operating supply items (MRO)—must not be used to build up inventory stocks.

NPA said that some wholesalers, anticipating DO-97 rated orders from their customers, are building up stocks in advance to meet this expected demand by extending DO-97 rating prematurely to their own suppliers. This is a violation of Regulation 4. The wholesaler must not use the DO-97 rating to get replacement items until he has received a DO-97 order from his customer. When he gets such a rated order, it then becomes permissible for him to use DO-97 to replace the item sold.

The DO-97 rating was established as a means of protecting civilian production and economy as far as possible by keeping civilian facilities in operating order. The rating may be used by any business firm, government agency or private or public institution as provided in Regulation 4.

Military Paper Requirements

WASHINGTON, D. C. — Additional light on military needs for paper came last week at a meeting of the Writing Paper Manufacturers' industry advisory group with NPA, when a GPO representative said these requirements would range between 55,000 to 60,000 tons of paper in the next six months, based on statements by the Quartermaster's Office.

The total is for both current needs and to fill back orders. The group heard from NPA the same outline for proposed new inventory and other regulations given during the week to various other paper industry meetings, but took no stand as a whole, on the proposals. One committee member did comment that he felt the order is premature.

Priority Rating On Export Equipment

NPA and the Office of International Trade announced that the DO-97 priority rating may be used by exporters to enable them to get replacement parts and accessories for machinery and equipment for shipment to foreign countries during May and June.

Klipstein Succeeds Bates

WASHINGTON, D. C. — Joseph S. Bates has resigned as director of the NPA's chemical division, to return to his private chemical business. He will be succeeded by Kenneth H. Klipstein, deputy director, on leave from Calco Chemical Div. of American Cyanimid Co.

FOURDRINIER *Flexibility*

Downingtown Head Box and Slice are Adjustable to Meet Wide Range of Conditions

The design of the Downingtown Fourdrinier Head Box and Slice installed at Sonoco Products Co., Hartsville, S. C. is an example of the extreme flexibility which it is possible to build into a machine.

The stainless steel head box has a removable five-valve manifold inlet, and, because of its design the size and number of inlets are quickly changed when desired, without disturbing the head box itself. Adjustable partitions permit changing flow characteristics from inlet to slice to suit operating conditions. In addition, all parts are easily accessible for cleaning.

Interchangeable high and low speed slices are provided and are designed for machine speeds up to 1500 FPM. The low speed slice is used for machine speeds up to 250 FPM and above that the high speed slice is substituted.

These are a few of the adjustments which can be made in this most modern and versatile Fourdrinier. And what is vitally important, from an operating and maintenance standpoint, is that all adjustments are made by regular mill employees and do not require the services of highly trained engineers. This one factor alone prevents excess down-time and non-productive man hours of labor.

Write for this interesting bulletin: "Building Versatility into a Fourdrinier," which describes the complete machine in considerable detail.

DOWNINGTOWN MANUFACTURING COMPANY, DOWNINGTOWN, PA.

Pacific Coast Representative: John V. Rosland, Pacific Bldg., Portland 4, Oregon

DOWNINGTOWN

STAINLESS STEEL FOURDRINIER

Built-in Versatility

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1880

"Tycol Acylkup runs bearings cooler... slashes repair costs... steps up production"

A fact! Tycol Acylkup Grease is an expertly blended calcium soap and specially selected cylinder oil stock combination that assures long bearing life . . . less down time loss . . . lower maintenance costs . . . lower output cost per pound of grease. It is available in a number of penetration ranges to permit application indoors or out— under all weather conditions.

Ask your nearest Tide Water Associated office for complete information. Call today.

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SEND FOR A FREE COPY OF "TIDE WATER ASSOCIATED LUBRICANIA"

SEYBOLD
POLICY
NAME
It is our policy in building SEYBOLD CUTTERS, that you shall have:
*Day-in, day-out top quantity production.
*Day-in, day-out top quality production.
*Genuine Seybold replacement parts for years to come.
*Factory trained service personnel even during war emergencies.
*The benefit of engineering experience, based upon production of 16,000 cutters.
*Highest trade-in or re-sale value, as in the past.
*Satisfaction, based upon our continuing interest in your business success.
*Years of production, based upon the past average life of 33.6 years for Seybold cutters.
* Average Life Expectancy of a Seybold Cutter: 33.6 YEARS
HARRIS-SEYBOLD
General Offices • Cleveland 5, Ohio

Now— Corrugated Cartons For Citrus Fruit

C. E. Wright
Jacksonville, Fla.

After nearly two years experimentation and tests, the Kraft board industry believes it has worked out a final solution of the difficulties that beset the development of a corrugated fresh fruit container.

During the current citrus shipping season, which has been one of the largest in Florida history, the use of the corrugated container has not been widespread, but this has been due largely to the fact that a heavy influx of orders for corrugated containers for established uses has made it impractical for the industry to create more new business than it might be able to supply.

The potentialities of the new box, however, are such that, once the production of Kraft board is increased as a result of new facilities now being built or to be built soon, the market will be wide open for development. One of the first users of the corrugated box is the Haines City Citrus Growers Association of Haines City, Fla., which shipped about 18 carloads during the 1949-50 season and will have shipped about the same quantity by the completion of the present season. A number of other Florida packers have also used the box, and its market has now spread to California, where the Mutual Orange Distributors of Anaheim will use it during the 12 months' season that prevails in that State.

During the 1950-51 season the Florida citrus industry will have shipped about 100,000,000 boxes of oranges, of which about 30,000,000 will be fresh fruit shipped to markets throughout the country and abroad, the remainder being used for frozen concentrate and single and double strength canned juice. The eventual capture of a portion of this market will assure the Kraft board manufacturers of a sizable outlet for a portion of the larger Kraft production they will have during the next few years.

Earl W. Brown of the St. Joe Paper Co., Jacksonville, who has considerable to do with the marketing of this box for his company says that "In all comparative tests, both rail and truck shipments, this new box has stood up better than any of the standardized packaging that might be regarded as competitive. In the storage of fruit after arrival at destination, this box, under normal conditions, keeps the fruit usable up to 125 per cent longer than do the wire-bound and nailed-up boxes."

Mr. Brown cites another factor which he believes will give it widespread consumer acceptance. "It is an ideal consumer package," he says, "as it can readily be opened with a pen knife and does not require tools as do the wooden boxes."

The cost factor is highly favorable to the corrugated box. With a Phenodor lining for the retarding of decay, a 4/5 bushel corrugated box costs the shipper about 19 cents against approxi-

mately 40 cents for a 1 3/5 bushel Bruce box. Thus two corrugated boxes, holding the same quantity as a Bruce box, cost only 38 cents. For packing tangerines the spread is even greater. A wooden container of standard 4/5 bushel size for this fruit costs 27½ cents against about 19 cents for the corrugated box. In California a wood box holding 1-3/5 bushel costs about 50 cents, whereas the Kraft box can be supplied at 19 or 20 cents, or 38 to 40 cents for two which hold the same quantity as the wood box.

It was natural that the Kraft board containers in Florida should want to cash in on the enormous market lying right at their doorsteps. In September, 1949, the project was placed before the Fourdrinier Kraft Institute, Inc., in New York, and thus was launched what the trade has referred to as the citrus box program. Now that it has been developed for citrus, possibilities are seen that it may also be used extensively by apple shippers when the industry is in a position to handle all of the business that might be offered.

In the initial development period it was clearly recognized that no ordinary type of corrugated or fibre board box would do, because it would have to carry a high compression load at 85 to 90 per cent relative humidity. There were early failures in the experimental use of V-board, asphalt board, and all weights of regular board to regular slotted Bliss boxes and semi-telescope boxes. A subsequent experiment with a 1 3/5 bushel box reinforced with inner tubes dipped in molten sulphur was cast aside when it was learned that a Kraft box containing 90 to 95 lbs. of fruit was impractical. There were other experiments, some with ventilated boxes, as the citrus industry had been instisting that citrus fruits could not be shipped satisfactorily without ventilation. Attempts were also made to pre-cool the fruit, but these also resulted in failure, as a greater percentage of decay occurred than in fruit that was not pre-cooled.

While this trial and error method of arriving at a solution was being worked out, the Foudrinier Kraft Institute learned of a so-called Phenodor liner, which the Weathers Packaging Service of Orlando has developed during World War II in shipping oranges for the Quartermaster's Corps of the Army. This paper lining, which is treated with diphenyl, at first created an unpleasant odor, but during the summer of 1949 B. A. Weathers Jr. spent some months working with the Institute of Paper Chemistry at Appleton, Wis., in developing an improved counteractant of diphenyl. A formula was finally arrived at which was an improvement over the original formula in the control of decay and in addition provided a pleasant residual odor.

Although the industry has been able to supply all of the boxes which have thus far been ordered, it has not been pushing their introduction elsewhere pending an improvement in the supply situation. When that time arrives, the Kraft companies will have to do considerable work with Northern buyers who have long been educated to the use of the Bruce wood box, in which the bulk of oranges and other citrus fruits are now shipped. One point of resistance that will have to be overcome is that many buyers, particularly at auctions, want to see the fruit they buy, which of course is not possible with a closed container; but with some buyers that have already been educated to the use of the Kraft box, notably several of the chain store organizations, the better preservation of the fruit in shipment has overcome whatever objections they may originally have had because of the non-visibility of the contents.

Wood Waste in the Douglas Fir Region*

F. W. Guernsey[1]

The need for increasing the utilization of all forest products is apparent when the per capita consumption of wood and pulp products is examined. To implement the aim of the Food Agriculture Organization of the United Nations to raise the standard of living throughout the less developed nations, more of the products of the forest must be consumed.

In the Douglas fir region of Oregon, Washington, and British Columbia, it is estimated that the forest yield would be increased 20 to 25 percent if the residue now being left in the woods could be utilized.

In the sawmills of the region utilization of the waste is fairly complete, but at present this material is diverted to relatively low value uses. Revenue to the mills in one area, at least, amounts to only 2.3 percent of the value of the lumber produced, indicating considerable room for improvement in economic utilization.

Introduction

Increasing demands for all types of forest products, together with decreasing supplies of accessible virgin timber, have resulted in a broad program for the maintenance of forest land at full productive capacity and for its protection from fire, disease and insects. Closely associated with these problems is that of utilizing to the best possible advantage the material harvested from the forest. This involves a reduction in the large volume of so-called waste resulting from conversion of the standing tree to its final use.

The Third World Forestry Congress, held at Helsinki, Finland, in July, 1949, recognized this when it recommended:

"The encouragement of integration of the various wood-using industries . . .

. . . that efforts should be made not only to expand outlets for wood waste but also to create new ones in conformity with technical and industrial progress . . .

. . . that special attention should be given to the grading of timber in order to ensure to each product its appropriate use . . .

. . . that scientific research aiming at the utilization of wood waste should be continued and increased from the physical, chemical, mechanical and biological point of view . . .

. . . that in order to attain these aims, the laboratories concerned are invited to coordinate scientific and technical research and F. A. O. should collect and disseminate infor-

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* Presented at the Fourth Annual Meeting of the Forest Products Research Society at Portland, Ore.

[1] Forest Products Engineer, Vancouver Laboratories, Forest Products Laboratories of Canada, Vancouver, B. C.

[2] Published with the permission of the Director of Forestry, Dept. of Resources and Development, Ottawa.

mation on the result achieved in various countries." (*1*)

In order that the need for utilizing all available wood supplies may be appreciated, a short review of the world situation as reported in various publications of F. A. O. is presented.

Europe and North America together produce about 45 percent of the world's output, although they possess only 29 percent of the world's accessible productive forest. Latin America and Africa, with 34 percent of the world's forests, produce about 15 percent of the output. South and East Asia and the U. S. S. R. together produce about 38 percent.

The annual consumption of wood per capita varies tremendously and is shown as follows:

North America (excluding Mexico)	78	cu. ft.
Oceania	74	"
Latin America	46	"
Europe	28	"
Africa	10.5	"
Asia	3.5	" (*2*)

Accepting these figures as the present range of consumption there is obviously a need in many countries and continents for a substantial rise in the consumption of wood in all its forms. This need is greatest in the Far East and Near East but it exists also in heavily forested regions such as Latin America and Eastern Europe where low incomes keep wood consumption down. The current volume of wood output cannot meet present needs, and unless production is substantially increased, will not meet future needs, since the world's population is increasing at the rate of one percent yearly. The forest output must therefore be expanded.

One of the yardsticks of the standards of living of a nation is the quantity of pulp and paper products consumed by its people. The F. A. O. Year Book Forest Products Statistics, 1948, gives some idea of the annual quantities of pulp used per capita in the following zones:

North America (excluding Mexico)	344	lbs.
Australia and New Zealand	103	"
Europe	46½	"
Latin America	33	"
Near East and North Africa	4¼	"
South and East Asia	0.9	" (*2*)

Here again it would appear that pulp production must be increased if per capita consumption is even to be maintained.

The United States and Canada produce 67 percent, and Europe 26 percent of the world's pulp products. According to a Report on World Pulp Problems by F. A. O. an appraisal of the forest situation in the United States, published in 1948, indicates that total growth and total drain are more or less in balance. There is, however, an indicated overcut of 23 percent in the coniferous forests which provide 85 percent of all the pulpwood cut. It is estimated that the larger sizes of trees which currently make up a major part of the pulpwood supply are being overcut at the rate of 50 percent. Despite this condition, the annual production of pulpwood in the United States is expected to increase 180 percent in the next 50 years, lumber and sawn products to remain more or less stable and fuel-wood to decrease.

One of the methods by which this increased production is to be accomplished is by the closer utilization of residue now being left in the woods after logging or destroyed in refuse burners during the manufacture of lumber.

This article deals with the utilization of so-called waste in the Douglas fir regions of Oregon, Washington and British Columbia.

Logging Waste

Logging in these regions is by high lead or modifications of the high lead system with heavy Diesel or steam equipment. Transportation from the woods to the log dump is by railroad or truck—the latter system gradually replacing the former in the more recent operations. The system is designed for high speed production, but it is probably the most wasteful in the world since it causes considerable breakage and the size and weight of the equipment make it unprofitable to harvest much of the sound wood in the form of small logs and broken chunks. The debris is heavy, and although frequently it is not considered merchantable, it contains much wood material which should have some useful purpose. Both sawmills and pulp-mills have been designed to handle large logs, and with a plentiful supply of high grade material there has been little inducement to harvest small wood. During and since the war more and more interest has been shown in the recovery of small wood left as residue and many studies have been conducted in Oregon, Washington and British Columbia on the quantity, quality, and value of this material.

Table 1 shows the results of several of these studies over a period of years and indicates the uniformity of the percentage of waste throughout the whole area.

There are three general methods of removing small material:

(a) Pre-logging.
(b) Clean logging.
(c) Re-logging.

Pre-logging is the process of felling and yarding small trees before the main operation.

Clean logging is felling and yarding all material, both large and small during one operation.

Re-logging is the removal of the small material and residue after the main operations.

The three methods are being practiced in the region and the method selected depends on many factors. Pre-logging and re-logging operations generally use special light mobile equipment for yarding and loading the small material.

The utilization of logging waste is mainly for pulpwood. In 1948, in Washington 7.73 percent of the total volume of wood used for pulp manufacture was derived from logging salvage. (*8*) This is probably much greater than in either Oregon or British Columbia. The hydraulic barker and whole log chipper have simplified, to some extent, the handling at the pulp-mill. The processing of salvage wood from the Comox Logging Company study (*6*) indicated that the strength of groundwood from the salvaged hemlock was slightly below that of average hemlock logs, and that the strength of groundwood from Douglas fir was less than that of poor hemlock. This condition may have been due to the long periods during which the material lay in the woods. The wood also had about three times the dirt-making properties of normal pulp logs, but this could possibly be greatly reduced by the elimination of very knotty logs. Pulp yield of both hemlock and Douglas fir was higher than that of normal hemlock pulp logs.

Logging waste also has a value when converted to lumber. *Table 2* shows the results of two studies on the grade recovery of salvaged logs. Study No. 1 (*5*) was conducted by the Oregon

Table II

Grade	Study No. 1 Percent Recovery	Study No. 2 Percent Recovery
C Clear and Better	3.4	1.3
Select Structural	2.1	3.2
Select Merchantable	6.1	0.7
Posts and Timbers	6.5	....
No. 1 Common	6.3	34.1
No. 2 Common	42.4	42.2
No. 3 Common	25.5	11.7
No. 4 Common	7.7	6.8
Total	100.0	100.0

Table I.—Percentage of Recoverable Waste from Logging Operations

Reported by [1]	Area	Sound Material per Acre Ft.b.m.	Sound Material per Acre Cords	Percent of Original Volume
(3)	Washington and Oregon	21,400 [2]	42	19.7
(4)	British Columbia	16,500 [2]	27	19.5
Oregon Forest Products Laboratory, 1944 (*5*)	Oregon	26,408 [2]	51	21.0
(6)	British Columbia	7,440 [2]	15	19.0
(7)	Oregon	12,000 [4]	24	...
Forest Products Laboratory, Vancouver, 1948	British Columbia	19,950 [2 3]	40	23.0

[1] For authorities reporting literature cited at end of paper.
[2] Estimate only of recoverable waste (probably too high).
[3] Actual volume removed in experimental logging.

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Forest Products Laboratory in co-operation with a portable sawmill, and Study No. 2 (*7*) was conducted by the Pacific Northwest Forest and Range Experiment Station, the U. S. Forest Service, and the Dwyer Lumber Company, using a Swedish type gang mill.

There are many factors affecting the recovery of logging waste, the main factor being economic. Costs are higher even when light mobile equipment is used and often a slight downward trend in the price of sawlogs will affect the utilization of waste material. Pulp mills are reluctant to take too great a volume since they are still geared to handle the larger logs and salvage wood creates more dirt than normal logs. The effect of decay on the residue also has an important bearing on its utilization. Studies are being conducted by the Forest Products Laboratory, Vancouver, on the effect of deterioration in quality of logging residue and on its utilization for pulpwood in the coastal region of British Columbia. The study has not progressed to a point where definite conclusions can be stated but indications are that deterioration of hemlock and balsam, (true fir) becomes apparent within one year of the original logging. Several new fruiting bodies of fungi were noted on one-year-old residue, pockets of incipient decay in the sapwood of two-year-old, and pockets of advanced decay in three-year-old material. The wood-destroying fungi noted were mainly those which attack cellulose, producing brown rot.

Sawmill Waste

The utilization of sawmill waste does not present the same problems as logging waste. Most mills are in, or close to, centers of population where transportation facilities are available and the material is more readily disposed of in some form or another. Consequently the utilization of sawmill waste in such areas is fairly good, although many of the small and medium-sized mills in outlying districts still destroy most of their residue.

The waste is of a diversified character and consequently does not lend itself for use in any one product. It may be classified as follows:

Solid waste (slabs, edgings and trim).
Sawdust.
Shavings.

Solid waste can be utilized in many forms, a few of which are:

Lath.
Broom handles.
Shingle bands.
Pulpwood and chips (pulp and board).
Fuel.
Hogged fuel.

Sawdust at the present time is used mainly for fuel, either by the mill for the generation of power or by domestic and other consumers. Shavings at the present time are used almost exclusively for fuel by the mill, or compressed into fuel briquettes.

The production of shavings, which does not decrease the board footage and actually increases the value of the lumber amounts to 8.9 percent of the total volume of waste in Oregon and 9.0 percent in British Columbia.

Assuming that 1000 ft.b.m. of logs contain 162 cubic feet of wood and that one cord of solid waste contains 65 cubic feet of wood (exclusive of bark) every 1000 ft.b.m. of logs cut will produce 28.5 cubic feet or .44 cords of solid residue. Also assuming that one unit of sawdust contains 80 cubic feet of solid wood, every 1000 ft.b.m. of logs cut will also produce 25 cubic feet or .31 units of sawdust.

Most of this waste material is used for fuel, either by the mills for developing their own power or sold as domestic or industrial fuel. In 1944 approximately (*8*) 71 percent of the residue was used for fuel in Western Oregon, 86.3 percent in Western Washington (*10*), and 71 percent in the coast region of British Columbia (*11*).

The percentage of residue sold for pulpwood and chips was 5.1 in Western Washington, negligible in Oregon (*10*) and about 4 percent in British Columbia.

Less than one percent of the waste is converted to lath, broom handle squares, or other products in Washington and Oregon and about 1.5 percent in British Columbia.

Approximately 28.7 percent of the waste is not marketed in Western Oregon, 8.1 percent in Western Washington and about 8 to 12 percent in British Columbia.

The value of the various products is not known in Oregon or Washington but their value has been computed for British Columbia, based on values obtained from the Dominion Bureau of Statistics for 1947.

They are as follows:

	Value per Cubic Foot
Broom handle squares	$0.62
Lath	0.58
Shingle bands	0.41
Pulpwood and chips	0.11
Solid fuel	0.04
Sawdust	0.03
Hogged fuel	0.02

While the above values refer only to British Columbia, the relative values in Oregon and Washington are probably of the same order. In the coast region of British Columbia in 1947 the total value recovered from sawmill waste products amounted to only 2.3 percent of the value of the lumber produced. This indicates that there is room for improvement in the economic utilization of the various products.

Many factors affect the utilization of sawmill waste. Much of the material now being destroyed is unsuitable for anything except fuel, and even much of this must be processed in some way to make it desirable for domestic use. On the other hand, much of the material now being sold as fuel would benefit the sawmill in increased revenue by its conversion to pulp chips or other more valuable products. Since fuel is a necessity in our economy it is likely that sawmill waste will continue to be used for this purpose in some form or another.

One of the most pressing problems, however, in British Columbia at least, is the utilization of hemlock sawdust, and solid waste too small for pulp chips. It is not a popular fuel since its moisture content, green, is too high and its calorific value is lower than that of Douglas fir. Any processing into fuel briquettes will require the evaporation of water at least equal to the weight of wood material. Even when this material is converted to hog fuel for industrial use, it must be mixed with shavings or oil to insure satisfactory burning.

Cedar waste, both from sawmills and shingle mills, presents a similar difficulty.

As a step toward solving these problems, the Forest Products Laboratory in Ottawa is studying the board-making qualities of cedar wood and cedar bark. The Laboratory in Vancouver is studying the extraction of tannin from the bark of salt water floated hemlock logs. One of the potential uses for this tannin is in oil drilling mud where salt content apparently is not a deterring factor. Laboratory tests by one oil company indicate that it may have possibilities.

Table III.—Percent of Cubic Volume Converted to Sawmill Waste in the Douglas Fir Region

	Oregon(*9*)	Oregon and [1] Washington	British [2] Columbia	Average
Solid waste	19.1	19.3	14.5	17.6
Sawdust	14.5	14.1	17.8	15.5
Total	33.6	33.4	32.3	33.1
Total rough green lumber	66.4	66.6	67.7	66.9

[1] See Literature Citation (*10*).
[2] See Literature Citation (*11*).

Conclusions

The problem of the utilization of waste is a complex one. Large organizations can afford the capital outlay necessary to develop pulpmills, board plants and so forth to utilize to best advantage the product of the forest. There is, however, the problem of small and medium-sized operations where means are limited and where lo-

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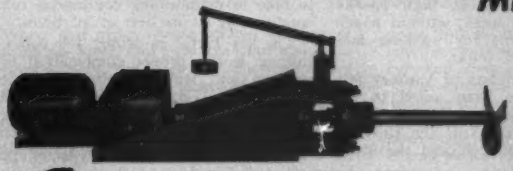

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cation may preclude them from selling to converting plants. It would appear that for them, at the present time at least, minimum returns from their waste products must be expected.

In the meantime, research organizations and industry will continue to work on the problem, gradually developing new uses and products, thereby increasing the utilization and value of the present residue. Coupled with this development should come new methods and machines to utilize the smaller logs that will be available from the vast areas of second-growth soon coming into production.

World shortages of wood and pulp products, and overcutting of our virgin forests, make it imperative that proper utilization of all forest products be practiced. If and when the economic unbalance of the world is overcome, wood products of all kinds will play their part in raising the standard of living of the less developed countries. Logging and sawmill waste will then become too valuable to leave on the ground or to destroy in a mill burner.

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(10) Wilson, Sinclair A. 1946. Sawmill "Waste" Developed, Used and Not Used in Oregon and Washington in 1944. Pacific Northwest Forest and Range Experiment Station. Mimeo. 32 pp.

(11) Guernsey, F. W. 1949. The Utilization of Sawmill Waste in the Southern Coast Region of British Columbia. Forest Products Laboratories of Canada, Vancouver Laboratory. Mimeo. Bulletin, 34 pp.

MAINTENANCE—II of Series

Maintenance of Felt Conditioners

B. D. Warren[1]

Vickery felt conditioners have become standard equipment on the first and second press felts of hundreds of paper machines. They are valued, particularly in times of emergency production such as the present, because of their ability to keep press felts functioning continuously at high speeds right through the week, without paper machine shutdowns for washing and roping of clogged felts.

Accordingly builders of Vickery felt conditioners have been asked to set forth the principal factors that determine the effectiveness of the cleaning job for any given felt and the steps to take in maintaining continuous felt conditioning at its best at all times.

The key factor in proper felt conditioning is the proper combination of vacuum and water employed in the conditioner. Experience is the best teacher when it comes to this. Once established at installation and from careful observation after installation,

[1] Assistant Sales Mgr., Sales Engineering Dept., Bird Machine Co.

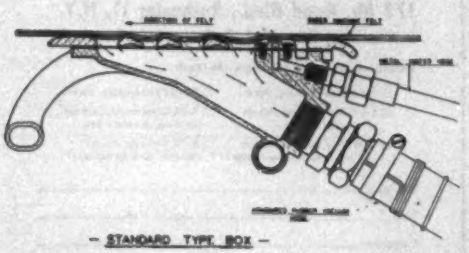

Figure 1—Shows travel of felt and introduction of warm water and its removal by vacuum in Vickery type conditioner box.

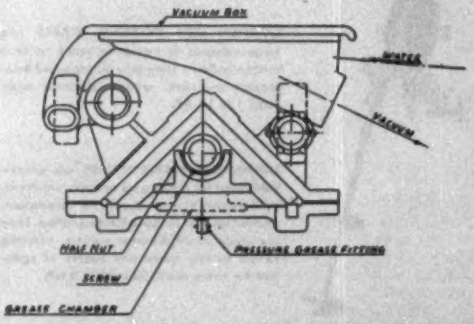

Figure 2—Lubrication diagram for Vickery type conditioner box.

What you can do to make the supply of Stainless Steel go further

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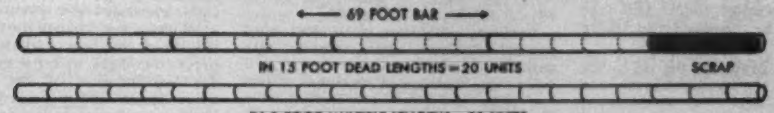

When you order sheets, plates or bars of Stainless Steel, don't confine your specifications to mere "dead lengths." Such procedure often leads to a waste of material.

Instead, place your orders in terms of *multiple lengths*. In other words, tell your supplier the actual dimension in which you will eventually use the steel. By doing this, you'll often get *extra* units from good steel that otherwise would be consigned to scrap.

For example, suppose you've been ordering 15-foot bars and are using the steel in 3-foot units. If the mill should roll a 60-foot bar, we could cut only four lengths or 20 3-foot units from it. But when ordered in multiple lengths, we could cut 23 units from the same bar, and scrap losses would be minimized.

The same thing holds true when you are ordering sheets, strip, or plates. The more we know how you will use the steel—the actual sizes you are planning to work to—the more chance we have of taking care of your requirements.

Cooperation from all concerned will stretch supplies of Stainless as far as possible. Specifying multiple lengths is one way you can help. (And it's equally important in your orders for alloy steels and plain carbon steels, too.)

Keep these points in mind, too, when you order Stainless.

Tell your supplier exactly where you'll use Stainless and how you'll fabricate it.

Indicate, if possible, acceptable alternates in composition, gage and finish.

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no excess of vacuum or water over that indicated as proper should be permitted—otherwise felt life may be adversely affected.

The water heater should be cleaned at regular intervals. The temperature of the water at the conditioner head should be checked from time to time. In most cases this should be around 90° to 100° F., although extreme conditions sometimes require higher temperatures. If you are still using an old model of conditioner with steam going direct to the conditioner shoe, it is recommended that you discontinue the steam line, plug it, and arrange for heating the water that passes to the conditioner in the water line. Water at 15 to 20 lbs. pressure and 3 gallons per minute is average, variations depending on the type of felt being conditioned.

The individual vacuum supply for a conditioner with Vickery type boxes runs from 30 to 40 cubic feet per minute per box, employing 3 to 5 inches of vacuum.

The "Jordan" type box which has proved so effective on high speed machines uses 8 gallons of water per minute at 90° to 100° temperature; vacuum is 100 cubic feet per minute with 10 inches of vacuum.

Check alignment frequently, making sure that the conditioner shoes are parallel with the run of felt and in firm but not excessive contact with the felt.

Inspect the surface of the shoes, spray plate and bridge to be sure that erosion or abrasive filler in the stock has not produced sharp edges that might cut the nap of the felt. Modern shoes have renewable faces. Old type shoes should be replaced, as sharp edges occur.

Lubrication. Maintain the oil in the gear box at the proper level and change oil once every two weeks. Check the old pump to be sure it is operating properly. Open up the gear box from time to time to make sure that it does not contain water condensate.

Grease half nut and shaft bearings once a week. (See diagram).

Keep all surfaces clean and keep painted surfaces well covered with paint.

On big, high speed machines, Vickery felt conditioners are often installed at some distance from the press rolls and have to be driven from small diameter felt rolls. For such cases a special high speed gear box is available that provides the greater reduction necessary to transmit just the right speed for the conditioner.

Whenever a change is made in the length of the felt or diameter of the press roll, check with the manufacturer for recalculation of the conditioner drive speed and necessary gear box changes—otherwise you are in danger of seriously reducing conditioning efficiency.

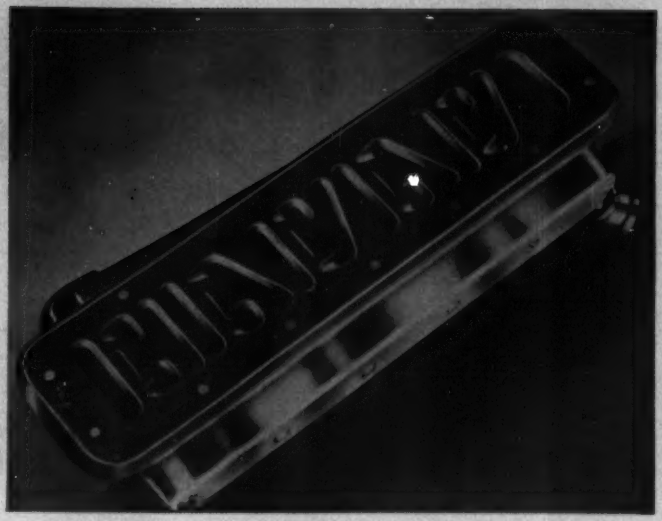


Figure 4—The "Jordan" type conditioner box for Vickery Felt Conditioners. The five small slots in the center between the large air openings introduce warm water. The water goes through the felt and back in a hairpin turn five times as the felt travels over the shoe. The large slots and holes near the edges suck in the water and flex the felt. More water can be sprayed into the felt and high vacuum is employed without wrinkling the felt even at top speeds.

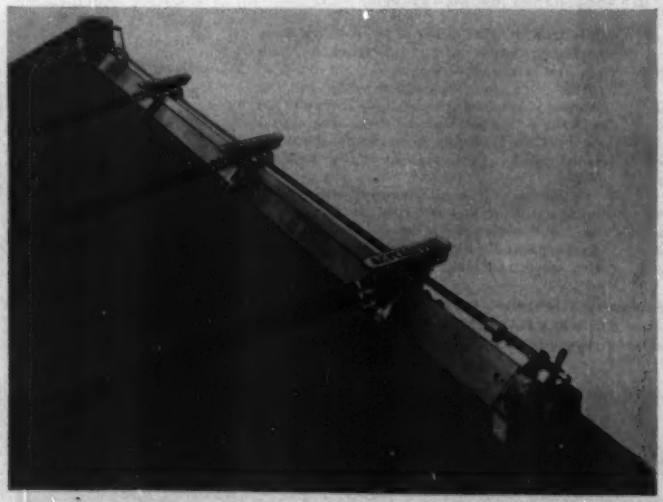


Figure 3—The Vickery Felt Conditioner.

MIAMI PLANT CHANGES NAME

The Miami box plant of National Container Corp., 3700 N. W. 54 street, formerly operated as its Miami Division, has been transferred to Miami National Container Corp., a newly formed Florida corporation which will be a subsidiary of the parent company, National Container Corp. of Delaware.

Lee Lebow is vice-president and general manager of the new company and Charles Ordintz is assistant secretary and assistant treasurer.

ALABAMA FOREST SURVEY

A comprehensive reinventory of the forests and forest industries of Alabama will begin May 7. The survey, second in Alabama's history, will be made by the Southern Forest Experiment Station, a branch of the Forest Service of the U. S. Department of Agriculture, in cooperation with the Forestry Division of the Alabama Department of Conservation.

Patent Abstracts

● *In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.*

U.S. 2,542,170 — Method of Adhesively Securing Valve Sleeves to Bags. Norman E. Weeks, Normandy, Mo., assignor to Bemis Bro. Bag Company, St. Louis, Mo. Filed October 9, 1948 — Issued February 20, 1951.

The method of adhesively securing a bag valve sleeve to the corner of a bag comprising the steps of assembling a sleeve with a bag at a corner thereof and with thermoplastic adhesive therebetween, feeding this assembly corner first through a heated presser unit at such a rate of speed as to permit the adhesive to soften and unite the sleeve and bag under heat and pressure, and subsequently pulling the remainder of the bag out of said unit at a substantially increased rate of speed thereby to clear the unit rapidly so that it may receive another bag and sleeve assembly.

U.S. 2,542,230 — Corrugating Machine Guide Structure. Hobart W. Bruker, Bordentown, N. J., assignor to George W. Swift, Jr., Inc., Bordentown, N. J. Filed April 9, 1949 — Issued February 20, 1951.

A corrugating machine of the character described including a first corrugating roll having a series of peripheral grooves therein, a second corrugating roll meshing therewith, stripper blades extending into the grooves of said first corrugating roll, a stripper blade holding structure extending transversely of the machine adjacent said first corrugating roll, said holding structure and blades having parts engaging to hold said blades in operating positions respectively in said grooves but said parts being slidably engaged in a direction longitudinally of the first corrugating roll to afford movement of said blades longitudinally of said first corrugating roll while retained in said grooves in response to relative longitudinal shifting of the first corrugating roll with respect to the blade holding member.

U.S. 2,542,285 — Cellulose Products. Reid Logan Mitchell, Shelton, Wash., assignor to Rayonier Incorporated, Shelton, Wash. Filed July 23, 1946 — Issued February 20, 1951.

In the production of viscose having good filterability, the improvement which comprises forming the viscose from cellulose having low aging requirements and containing from 1 to 100 parts per million of manganese added as a water soluble compound based on the bone dry weight of the cellulose.

U.S. 2,542,402 — Solutions of Cellulose Triacetate. Russell P. Easton, Binghamton, N. Y., assignor to General Aniline & Film Corporation, New York, N. Y. Filed November 7, 1946 — Issued February 20, 1951.

A composition comprising cellulose triacetate having a combined acetic acid content of from 61 to 62.5% and a solvent mixture comprising ethylene chlorohydrin and a normally liquid alkyl polychloride of not more than 2 carbon atoms, having a boiling point of not lower than 40°C., and a normally liquid alcohol in direct proportion to the acetic acid content of the cellulose triacetate ranging from no alcohol for the 62.5% cellulose acetate to an amount of alcohol equal to the amount of chlorohydrin for 61% acetic acid content of cellulose triacetate, said alkyl polychloride being present in the ratio of 9 parts to 1 part of the ethylene chlorohydrin and alcohol mixture.

U.S. 2,542,344—Back-Sizing Compositions for Floor Coverings. Emory P. Mersereau, Jr., White Plains, N. Y., assignor to Alexander Smith & Sons Carpet Company, Yonkers, N. Y. Filed March 11, 1947 — Issued February 20, 1951.

As a back-sizing composition for floor coverings, a homogeneous aqueous composition having a viscosity of 200 to 2,000 centipoises and a yield value not in excess of 200 dynes per square centimeter, the solids of said composition consisting of the following ingredients in the named proportions:

	Per cent by weight
Sulfite waste liquor solids	28-50
Starch	20-35
Mineral filler	0-42
Plasticizing resin having a melting point below 70°C.	0-23

U.S. 2,542,801 — Continuous Digestion Apparatus for the Production of Highly Purified Cellulose. Joaquin J. de la Roza, Sr., New York, N. Y. Filed April 12, 1945 — Issued February 20, 1951.

Apparatus for treating cellulosic material, comprising a pair of digesters each having an inlet and an outlet, means supplying the material to be treated continuously to the inlet of one digester, at least two presses connected in tandem between the outlet of said one digester and the inlet of the other digester, means including a pipe connected intermediate the two presses for continuously supplying washing liquid to the material as it passes from the first press to the second press, means for continuously recovering the liquid expressed from the material by the second press and supplying the recovered liquid to the first digester.

U.S. 2,542,933 — Process of Manufacturing Dry Starch Preparations Soluble in Cold Water. Jan Lolkema, Hoogezand, and Willem Albertus van der Meer, Haren, Netherlands, assignors to Naamlooze Vennootschap: W. A. Scholten's Chemische Fabrieken, Groningen, Netherlands. Filed November 1, 1946—Issued February 20, 1951.

A dry stable starch preparation soluble in cold water to a solution which when dried on the surface of a material in the presence of an acid catalyst for the condensation will produce insoluble films, the said preparation comprising a mixture of a precondensate of melamine and formaldehyde and a hydroxy alkyl ether of cold swelling starch, in which the starch molecule is degraded by the alkaline treatment required for the ether preparation, it being degraded to such an extent that when dissolved in cold water it will produce a perfectly smooth, viscous, structureless paste, the components of said mixture being present in the form of discrete, separate particles.

U.S. 2,543,128—Outfeeding Mechanisms for Portable Debarking Machines. Michael J. Power, Nekoosa, Wis., assignor to Nekoosa Foundry and Machine Works, Inc., Nekoosa, Wis. Filed February 7, 1947 — Issued February 27, 1951.

In a log debarking machine provided with a feedway frame extending laterally from its outfeeding side and a plurality of rollers journaled in resiliently supported bearings carried by said frame, said rollers normally having coplanar axes, the combination therewith of a power driven shaft mounted on the debarking machine on an axis normally coplanar with the roller axes, and a belt connection between said shaft and one of the rollers remote from the shaft, whereby to allow the roller to vibrate in an arc intercepting the plane in which the shaft axis is displaced, under pressure of a rotating log, without objectionable change in belt tension.

U.S. 2,543,191 — Manufacture of Organic Esters of Cellulose. John Francis Neilson and John Arthur Hawkes, Spondon, near Derby, England, assignors to Celanese Corporation of America. Filed October 15, 1948 — Issued February 27, 1951.

A process for the manufacture of an acetone-soluble cellulose acetate having an acetyl value of at least 57%, calculated as acetic acid, which comprises acetylating cellulose with acetic anhydride in the presence of a solvent for the cellulose triacetate formed, using as catalyst throughout the acetylation 0.8 to 10% of orthoric acid and 0.2 to 2% of perchloric acid, calculated on the weight of the cellulose, and hydrolyzing the cellulose triacetate in the acetylation solution until the cellulose acetate is soluble in acetone and has an acetyl value at least 57%.

U.S. 2,543,777 — Sandpaper of Improved Durability Having An Adhesive Bond Which Is Predominantly Water Soluble. Charles K. Heasley, St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Filed April 4, 1949 — Issued March 6, 1951.

A flexible abrasive article of the coated abrasive type characterized in that the abrasive grains are bonded to a flexible sheet backing material by an adhesive bond which consists substantially of about 50-65 parts of animal glue as the continuous phase and uniformly dispersed throughout said glue, correspondingly about 20-35 parts of a water-insoluble, thermoplastic, normally solid organic resin, said resin being substantially completely of a particle size less than 60 microns, the majority of the particles being of a particle size of about 2 to 12 microns.

U.S. 2,543,836 — Sheet Feeding Machine. Benjamin Dunn, West Hartford, Conn. Filed January 9, 1947 — Issued March 6, 1951.

For use with a plurality collator wherein the sheets to be collated are adapted to be vertically disposed to one another, a collator comprising, a sheet holder, an ejector having a reciprocating ejecting and return movement, a vertically slotted yoke slidably receiving and guiding said ejector, cam means carried by said sheet holder at the sides thereof cooperating with said ejector at the end of its ejecting movement for lifting said ejector within said yoke from the sheets when said ejector contacts said cam, a track carried by said sheet holder for returning said ejector to its initial starting position, and drive means to move said yoke and said ejector carried therein for ejecting and return movements.

U.S. 2,543,858—Fungicidally Treated Multiwall Bag. Frank Raymond Linda, White Plains, N. Y., assignor to St. Regis Paper Company, New York,

N. Y. Filed April 9, 1948 — Issued March 6, 1951.

A multiwall bag comprising a plurality of paper tubes, disposed one within another, said tubes being formed with overlapping edges glued together longitudinally thereof, and all of said tubes being secured together at one end thereof to form a closure, one of said tubes being treated with a fungicidal agent, vaporizable at atmospheric temperatures, and in amount sufficient effectively to inhibit mold growth on goods packaged therein, and one of said tubes being treated with a plastic composition in amount sufficient to render the same relatively impervious to diffusion and escape of said fungicidal agent therethrough, said fungicidally treated tube being disposed inwardly of said plastic treated tube.

Can. 471,891 — Fluid Seals. Charles F. Voytech, Chicago, Illinois, U.S.A.; assignor to Crane Packing Company, Chicago, Illinois, U.S.A. Filed December 13, 1948 — Issued March 6, 1951.

A device for effecting a seal between relatively movable elements, said device comprising a sealing washer, a flexible compressible sealing member having a substantially cylindrical portion for engagement with one of the elements and a diaphragm extending from the cylindrical portion into engagement with the washer, a band supported solely by the cylindrical portion and adapted to compress the cylindrical portion upon the element engaged thereby, said band telescoping within the washer and having an axially slidable driving connection with the washer such that relative rotation between the washer and band is prevented but relative axial movement between the washer and band is possible, and means for clamping the outer end of the diaphragm to the washer to effect a fluid-tight seal therebetween.

Can. 471,901—Smooth, Mobile Polyvinyl Chloride Coating Compositions. Noel Armstrong, Newburgh, New York, U.S.A., assignor to E. I. du Pont de Nemours and Company, Wilmington, Delaware, U.S.A. Filed February 26, 1947 — Issued March 6, 1951.

A coating composition having a smooth, mobile and relatively stable consistency which comprises a finely divided polymer selected from the group consisting of homo-polymers of vinyl chloride and copolymers thereof obtained by polymerizing at least 95% of vinyl chloride and up to 5% of a monomer copolymerizable therewith, from 35% to 80% by weight of a liquid plasticizer which is a solvent for the polymer at high but not low temperatures, and from about 10% to 20% by weight based on the total composition of a diluent consisting of 15% to 75% of ethyl alcohol and 85% to 25% of V. M. & P. naphtha by weight, the percentage of plasticizer being based on the combined weight of plasticizer and polymer.

The composition of claim 1 in which the average particle size of the polymer diameter is less than 1.5 microns.

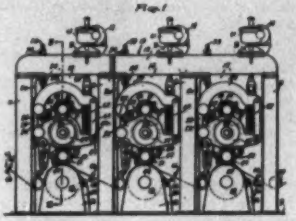
The composition of claim 1 in which the polymer is a copolymer of vinyl chloride and vinyl acetate.

The composition of claim 1 which has approximately the following composition by weight:

	Percent
Polyvinyl chloride powder	37.8
Butyl acetyl ricinoleate	15.7
Tricresyl phosphate	10.2
Blown castor oil	1.1
Pigment	35.2

the said composition being dispersed in a mixture consisting of 40% ethyl alcohol and 60% V. M. & P. naphtha in amount sufficient to contain 90% solids and 10% diluent by weight.

Can. 471,957 — Calender Machines. Charles P. Putnam, Lock Haven, Pennsylvania, U.S.A., assignor to New York and Pennsylvania Co., Inc., New York, New York, U.S.A. Filed November 3, 1945—Issued March 6, 1951.



A calender machine adapted for treating paper comprising a plurality of rolls arranged in tandem, an individual drive for each of said rolls, a separate calender roll in pressure nip relationship with each driven roll, each calender roll being rotatably mounted for free rotation through the nip from its cooperating driven roll, a guide roll adjacent each driven roll in advance of each nip and located therebeneath for lapping a web partially around the upper portion of the driven rolls to travel therewith through the nips between the calender and driven rolls and to hold the web out of lapping relation with the calender rolls, and means exerting pressure on the calender rolls to create the desired nip pressures.

Can. 471,970—Wood Pulp. Kenneth Russell Gray, Shelton, Washington, U.S.A., assignor to Rayonier Incorporated, Shelton, Washington, U.S.A. Filed June 22, 1945 — Issued March 6, 1951.

In a method of producing an improved refined wood pulp having an ether extract comprising both saponifiable and unsaponifiable matter, the improvement which comprises incorporating in the wood pulp the effective equivalent of a saponifiable soap forming compound and an unsaponifiable oil soluble interfacially active alcohol comprising a hydroxyl substituted hydrocarbon to produce a refined pulp having more of both ether extractable saponifiable and ether extractable unsaponifiable matter than the original pulp.

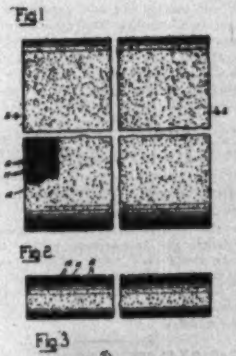
Can. 471,971 — Cellulosic Products. Kenneth Russell Gray, Shelton, Washington, U.S.A., assignor to Rayonier Incorporated, Shelton, Washington, U.S.A. Filed November 27, 1945 — Issued March 6, 1951.

In the production of viscose having an opacifying agent dispersed therein the improvement which comprises shredding alkali cellulose formed of wood pulp having ether extractable saponifiable and unsaponifiable matter therein, the unsaponifiable matter being water insoluble, oil soluble, interfacially active and consisting of a portion naturally present in the pulp and a portion added as an hydroxyl substituted hydrocarbon selected from the group consisting of an aliphatic hydroxyl substituted hydrocarbon having at least 10 carbon atoms and a cycloaliphatic hydroxyl substituted hydrocarbon having at least 10 carbon atoms, the total amount of unsaponifiable matter not exceeding 0.07% based on the bone dry weight of the wood pulp, whereby in the subsequent processing into viscose said opacifying agent is dispersed in the viscose without objectionable scum formation.

Can. 472,005 — Treatment of Starch Containing Flours with Concentrated Acetic Acid in an Inert Non-Aqueous Diluent. George V. Caesar, New York, New York, U.S.A., assignor to Stein, Hall & Company, Inc., New York, New York, U.S.A. Filed April 27, 1946 — Issued March 6, 1951.

A method of preparing a water dispersible starch flour product whose cooked water dispersions are homogeneous and have downwardly concave log viscosity vs. concentration characteristics at a concentration of about 20 weight percent solids, which comprises heating starch-containing flour in the presence of a single phase solution of an acid consisting of a glacial acetic acid in a non-aqueous inert solvent at the reflux temperature of the reaction mass until the said starch has a fixed acetic acid content in the range of from about 1 to about 8 weight percent.

Can. 472,137 — Industrial and Paper Makers' Felt. Percival T. Gates, Suffield, Connecticut, U.S.A., assignor to Drycor Felt Company, Belleville, New Jersey, U.S.A. Filed June 17, 1948 — Issued March 13, 1951.



A paper makers' felt for supporting and draining paper making material, comprising a fulled woven felt fabric having warp and weft yarns wherein at least one side of said fabric is free of nap produced by raising fibers of said yarns, and a surface cushion producing layer of fiber material at said one side of said woven fabric attached thereto by fibers of said layer needled into said woven felt fabric, the individual fibers of said fiber material being disposed partially through said fabric in a direction substantially perpendicular thereto to direct drainage therethrough.

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Florida Expansion & Conservation

JACKSONVILLE, Fla.—Coincident with the meeting here on May 3, of the Southern Pulpwood Conservation Assn., two major projects calling for increasing quantities of pulpwood in Florida and Georgia were announced. On the day of the meeting news reached here that certificates of necessity had been issued by the National Production Authority in Washington for a wood dissolving plant and a new pulp and liner board mill.

The dissolving woodpulp plant will be built at Perry, Fla., by the Buckeye Cotton Oil Co., subsidiary of the Procter & Gamble Co., Cincinnati, for the manufacture of cellulose as a base for explosives. The NPA is understood to have requested the Procter & Gamble Co. to build and operate this plant, which will be an important element in defense preparations. Woodlands crews have been surveying lands in Western Florida, where there is said to be sufficient unsold timber to provide ample material for this new plant.

The other project is a $25 million pulp and liner board plant to be built by the National Container Corp. of Jacksonville at Clyattville, Ga. The plant will have a daily capacity of 100 tons and will employ about 1000 persons.

These projects have been under consideration by the NPA for some months, but final approval was delayed pending a survey by the Forest Service of the U. S. Department of Agriculture to determine the availability of timber.

Coming on top of the recent announcement that the St. Joe Paper Co. had been granted a certificate of necessity for the expansion of its plant at Port St. Joe, Fla., at a cost of about $24 million, these three projects to cost more than $70 million, together with other expansion programs now under way or projected, such as those of the Union Bag & Paper Corp., Savannah, Ga., the Brunswick Pulp & Paper Co., Brunswick, Ga., the St. Regis Paper Co. at Eastport, near Jacksonville, and the same company's program at Pensacola, Fla., gave added point to the conservation and reproduction program in forest lands of this area.

More than 100 members of the Southern Pulpwood Conservation Assn. in area 3, which takes in Georgia, Florida, and the Carolinas, spent most of a day at the Olustee Nursery of the Florida Forest Service and the Olustee Experimental Forest, known also as the Osceola National Forest, operated by the U. S. Government near Lake City.

The nursery is one of two operated in the State by the Florida Forest Service, the other being near Pensacola. The Olustee Nursery has been providing between 10 million and 15 million seedlings a year for reforestation in Florida, and the one in the western part of the State provides about an equal number. Thus Florida is providing its forest lands with about one-fifth of the seedlings being produced annually in 12 Southern tree-growing States.

Of the Olustee Nursery output, about eleven million consists of slash pine, one million long leaf pine and small quantities of red cedar, catalpa and Arizona cypress seedlings. Seedlings are sold at cost and the demand for them from operators of Florida woodlands has been so great that the Olustee Nursery has been unable to keep up with its orders.

The procedure at Olustee is to plant about 6000 pounds of seeds annually, most of which is purchased locally. Part of the nursery is left fallow each year and at such times is fertilized at the rate of 500 lbs. per acre and planted with field peas. Seedlings are sprayed about once a month with bordeaux mixture to control disease. Weeds are controlled by spraying seed beds with mineral spirits at a rate of 20 to 40 gal. per acre.

In the forest the pulpwood men were shown various practices, especially methods of prescribed burning; also trees grown from cuttings with a record for exceptionally high yields of gum; also one-year old seedlings resulting from controlled breeding of selected slash pines; and the effect upon growth when slash pines are planted on poor soil.

There was a demonstration of the satisfactory integration of turpentining with forest management when modern methods of turpentining are used. It was pointed out that when these modern practices are employed the trees do not suffer damage which impairs their worth for saw timber or pulp. The methods recommended by the Olustee Experiment Station include bark chipping only on the low part of the tree, treatment with acid, and working of turpentining operations in cycles of from two to five years. When such methods are strictly adhered to, it was stated, the trees lose none of their value right down to the butt.

The Osceola National Forest was established in 1929 and now consists of 157,000 acres. When the property was acquired, the area was largely cut-over lands that were burned annually. Timber was in sparse stands of small trees and unmerchantable culls. Total fire exclusion was practiced up to 1843, but a disastrous fire in 1941 resulted in killing nearly all trees over 13,000 acres in what was some of the best timber land in the area. From then on the forest managers began to explore the possibilities of reducing the fire hazard by prescribed burning of the heavy rough.

An experimental burn in 1942 turned out to be the means of saving a stand inside the 4700-acre tract in the Mt. Carrie fire of 1943. Following that prescribed burning was carried out on a larger scale. Burning is now carried out at about 25,000 acres a year. Fire is used for rough reduction, seed bed preparation, disease control, planting site preparations and removal of fuel prior to naval stores or logging operations.

A cost record of burning has been kept which shows the following:

	Net Area Burned	*Cost per Acre*
1945	20,930	$0.109
1946	20,139	0.096
1947	16,324	0.120
1948	24,833	0.162
1949	21,180	0.156
1950	14,800	0.143
1951	27,670	0.133

These costs were divided as follows: Planning the job, 11 per cent; plowing fire breaks, 48 per cent; burning, 41 per cent.

Results of some of the other experiments that have been conducted at the forest were described. In 1944 a large scale study was inaugurated to investigate various methods of managing flatwoods forest land. Thirty-six compartments were set aside for various studies.

One compartment of 36.6 acres, for example, was devoted to production of pulpwood under an even-aged management system. The first harvest in this compartment is scheduled for 1954. In 1944 there were about 11 trees per acre with an old worked-out naval stores face. At that time (1944) approximately 20 of the better trees per acre were selected, marked with paint and left round. All other trees large enough were hung and worked for naval stores, using the bark chipping

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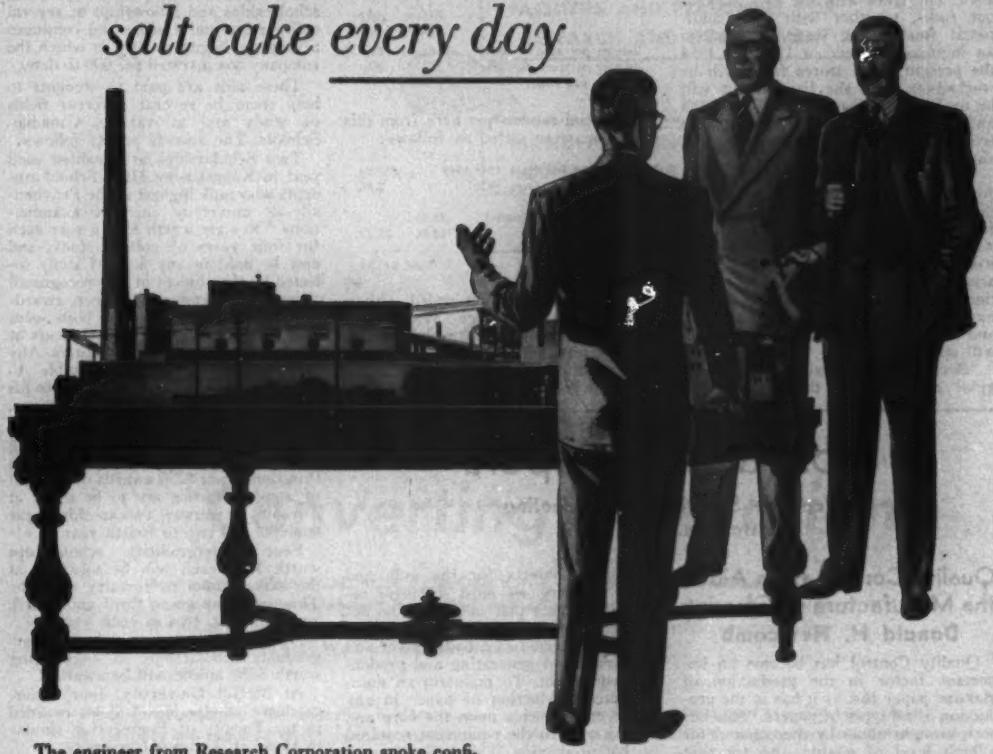

The engineer from Research Corporation spoke confidently. He had studied the equipment layout, and noted that the mill had a capacity of 1,000 tons of pulp per day. From his experience and specialized knowledge he knew that he could safely anticipate a minimum recovery of 100 pounds of salt cake for each ton of pulp produced—total: 50 tons of salt cake per day—value: $1,000.00 to $1,500.00 per day dependent upon salt cake cost prevailing at the plant.

Performance like this is the result of over 35 years of experience combined with careful engineering appraisal, attention to details and a remarkably efficient method. These, plus equipment which gives recoveries of 90 to 99%, are responsible for outstanding records of recovery.

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200 METALLURGICAL INSTALLATIONS
203 ACID PLANTS • 34 PAPER MILLS
262 DEBARKING INSTALLATIONS
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71 STEEL PLANTS • 95 OIL REFINERIES
AND MISCELLANEOUS INSTALLATIONS

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acid treatment method. Back faces were installed on the trees with worked-out front faces. In 1949 the naval stores faces had reached the five-year limit which had been established and were therefore considered worked out. All naval stores work was stopped on these five-year faces, front-faced trees were backfaced in 1950 and virgin faces were installed on the marked trees which had been left round in 1944. The trees with the two worked-out faces, together with some additional small trees, were removed in an improvement cut in 1950. In 1954 the present naval stores faces will be worked-out, and the harvest cut will be made, removing all trees 6 in. dbh and over with the exception of the trees left round in 1944 and given a single face in 1950.

These one-faced trees will be worked for an additional five-year period on the back-face, during which time the forest managers hope that sufficient seed will be produced to furnish a well-stocked stand of seedlings over the area. If there is not adequate reproduction when these residual tracts are removed in 1960, the area will be planted, and the cycle of pulpwood production will start again.

"Because of the nature of the original stand," says the management of the Olustee forest, "all products, including sawlogs, cross ties, poles and pulpwood, will be marketed in the first harvest cut. After this cut, the cuts will be so arranged that pulpwood will be the major product, and naval stores will not play such an important role in this particular type of management."

Data on the results from this stand were given as follows:

	Before cut	*After cut*
Volume per acre in cords	24.3	17.3
Number of trees per acre (6 in. and larger)	107	80

Financial returns per acre from this operation were stated as follows:

50 naval stores faces 1944-1949		$12.94
54 naval stores faces 1950		2.86
Stumpage		
Pulpwood (2.67 cords)	$8.33	
Poles (9.2 cords)	18.86	27.39
	Total	$43.19

The one-day meeting ended with a dinner at the George Washington House, Jacksonville, at which G. H. Wesley, manager of the woodlands division of the National Container Corp., was master of ceremonies.

Abstracts of Papers

Penjerdel Superintendents Meeting
Easton, Pa., May 11-12.

Quality Control as an Aid in the Manufacture of Glassine

Donald H. Newcomb

Quality Control has become an important factor in the production of glassine paper just as it has in the production of all types of papers. This has been brought about by the demand for a high level of quality and for that same level of quality to be maintained consistently. The increasing use of high speed waxers, presses, laminators and bag machines requires greater strength characteristics as well as mechanically perfect paper. At the same time increasing demands are being made for high quality glassine which means high greaseproofness and high transparency. Quality Control is one step which is being taken in an effort to obtain the necessary results to meet these standards.

This paper deals with the types of controls which are being used as an aid in the production of glassine papers.

Preventive Maintenance in Paper Mills

John Todd

After more than three quarters of a century's experience in inspecting and insuring boilers, pressure vessels and machinery objects for the pulp and paper industry, we must still very reluctantly report that in general no department of a paper mill is so frequently neglected as a boiler plant and and associated generating and production equipment. To maintain an uninterrupted production of paper in any paper mill depends upon the care and attention given the equipment required in that production. This boils down to preventive maintenance, which is a most essential function in the operation of any business. The first step in setting up a sound maintenance program is for management to cast aside the old idea that maintenance is unnecessary evil and to realize that good maintenance is essential for the production of paper on schedule and at a cost that means a profit for the company. A system of keeping records should be established and used. A record of repeated failures or chronic trouble with a particular piece of equipment is better than memory when trying to eliminate the conditions that cause plant shut-downs and loss of production. Increased attention should be paid to personnel. Job Training Programs not only teach men more about their own jobs but also show each man how his job affects all other complimentary jobs in the plant. Preventive Maintenance will produce satisfactory results in any kind of business, but due to hazards that are peculiar to the equipment in paper mills and the production demands to meet, preventive maintenance will and does produce real results in the production of paper.

SPRUCE FALLS SCHOLARSHIPS

KAPUSKASING, Ont.—The Spruce Falls Power and Paper Co., Ltd. has renewed for another year its Student Aid Program. This program provides scholarships and fellowships at several colleges and universities and continues a program begun in 1946 in which the company has invested $47,000 to date.

These aids are paid to students to help them in several different fields of study and at various Canadian Schools. The awards are as follows:

Two Scholarships are granted each year to Kapuskasing High School students who rank highest in the Provincially-set university entrance examinations. They are worth $500 a year each for four years of college study, and may be used in any field of study selected by the student at any recognized college or university. They were awarded first last summer, and both were won by girls, who are now students at Toronto and Queens Universities. Any Kapuskasing student is eligible to compete for these without regard to his family's connection with the company.

Undergraduate scholarships in science, in forestry, and in engineering are also included in the Spruce Falls Program. Four $250 awards in the field of applied science are to be made at Toronto University, two to third year students and two to fourth year.

Four undergraduate scholarships worth $250 each will be awarded at the same school to forestry students. They will also go to third and fourth year students, two in each year.

At Queens University, four undergraduate scholarships in engineering worth $250 apiece will be awarded.

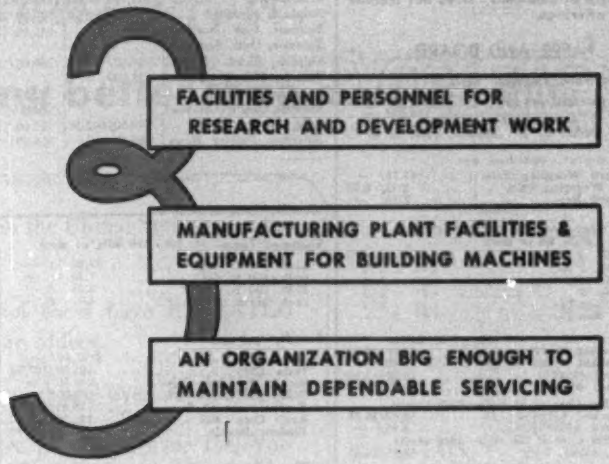
At McGill University, four undergraduate scholarships will be awarded in the Faculty of Engineering similar to those at Toronto University.

In the graduate field, two awards are to be made. A $1,000 fellowship is available to be awarded by Toronto University in the field of applied science. At McGill University, another $1,000 fellowship is available in the Department of Industrial Cellulose Chemistry.

Company officials explain that the control of the scholarship and fellowship funds lies entirely with the administration of the schools. Awards are made by them on the basis of grades made by the students in their examinations. Recipients may be from anywhere in the country, providing they are Canadians.

In the case of the fellowships, university officials have indicated their intention of selecting only top-flight graduate students. While the general field of study is specified by the donor of the funds, the student to be named and the specific courses of his study are left to the university officials concerned.

IT TAKES ALL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Rolls, contract, per ton	$105.00/110.00
Sheets	110.00/ —

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Kraft— pr cwt., 40# base wgt.

Standard Wrapping Rolls	$7.75/ —
No. 1 Wrapping Rolls	8.25/ 8.50
Standard Bag	7.50/ —

Tissues— per ream 24x36 (480) 10 lbs. 2500 lbs or more

Wh. No. 1 Frd.	$1.95 /$2.25
Wh. No. 1 MG	1.95 / 2.25
Wh. No. 1½	1.85 / 2.15
Wh. No. 2	1.85 / 2.15
Kraft Non-Tar	1.85 / 2.15
White Non-Tar	1.95 / —

Toilet— per case or 100 rolls—1 M sheets

Unbleached 4½x4½	$8.00/$8.25
Unbleached 4½x5	6.60/ —
Bleached 4½x4½	10.00/12.50
Bleached 4½x5	9.85/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$8.00/$9.75
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½x5, 2-ply	$8.95/10.65

Paper Towels— per case of 3750

Wh. Jr. M'tif'd 9½x9½	$5.75
Br. Sr. M'tif'd 9½x12	4.10
Br. Jr. M'tif'd 9½x9¾	3.60
Br. Jr. Sgl. fold 9½x10¼	3.65
Bichd. 7½x11, 24/25 rolls	$7.00/7.55

Manila, per cwt.

No. 1 Jute Tag, 100-lb., sheets*	$19.35/21.35
Reg. Jute M.F. 40-lb., sheets*	18.00/20.00
Wrapping Manila	8.75/10.50
Printing Manila	10.50/12.00

* Less usual allowance for rolls.

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Second Quarter Contract Prices, Per Short Air-Dry Ton

Varying freight allowances — Atlantic Ports

	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	‡$85.00/ 90.00	‡$95.00/100.00			
Sulphate, Bleached	135.00/200.00	190.00/200.00	*$275.00/315.00		*225.00/ —
Sulphate, Unbl. Northn.		145.00/175.00	*250.00/295.00	$200.00/ —	
Sulphate, Unbl. Southn.					
Sulphite, Bichd. (Sftwd.)	135.00/165.00	160.00/175.00	*275.00/290.00	*225.00/ —	*225.00/ —
Sulfite, Bichd. (Hdwd.)	155.00/ —				
Sulphite, Unbichd.		150.00/160.00	*250.00/265.00	*200.00/ —	
Sulphite, Unbl'd (Glassine)		164.00/ —	*252.00/ —		
Soda, Bichd.	140.00/142.50	155.00/160.00			
Siderums, Pulping News	106.00/ —	106.00/ —			

* On dock. † Delivered. ‡ F.o.b. Shipping Point.

Gummed Tapes—per bdl., 300 bdls. or more

90-lb. 375 ft. GSI	$7.20 / —
60-lb. 600 ft. GSI	7.20 / —
35-lb. 800 ft. GSI	8.28 / —
35-lb. 500 ft. GSO	6.21 / —

Boards, per ton—

Filled News	$107.50/ —
Plain Chip	105.00/107.50
Bichd. Mis. Ld. Chip	147.50/ —
White Pat. coated .020	170.00/ —
Kraft Liners 42 lb.	115.00/117.50
Kraft Corr. .009	122.50/126.00
Binders Boards	137.50/140.00

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—White, 20 lb.

Bonds	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$70.45/$75.90
100% Rag	62.65/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$72.65/$72.80
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.00/ 34.30

Sulphite Bonds and Ledgers White, 20 lb.

Bonds	4 Ctns.
	per cwt.
Watermarked	$19.00/$20.50
Plain	18.05/ 19.50

Ledgers	4 Ctns.
	per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Book

Conversion Coated	Case
	per cwt.
No. 1	$23.40/$24.60
No. 2	21.90/ 22.40
No. 3	20.40/ 22.40
Machine Coated	
No. 1	$18.15/$18.40
No. 2	16.15/ 16.65
Uncoated	
No. 1 Antique (Watermarked)	$18.65/$19.15
Offset	17.40/ 19.90
A Grade E. F.	17.40/ 18.15
A Grade S. C.	18.15/ 18.65
B Grade E. F.	17.65/ —
B Grade S. C.	16.90/ 18.40

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) PENDING OPS ROLLBACK, THESE PRICES REPRESENT CEILING RANGE.

	New York	Philadelphia	Boston	Chicago
	May 3	May 7	May 5	May 1
No. 1 Mixed Paper	$20.00/ 21.00	$18.00/ 22.00	$18.00/ 21.00	$20.00/ —
Bunboard Cuts	23.00/ 25.00	17.00/ 20.00	26.00/ —	25.00/ —
Mill Wrappers	25.00/ 30.00	18.00/ 25.00	22.00/ 30.00	22.00/ —
No. 1 News	23.00/ 24.00	20.00/ 22.00	— /22.00	20.00/ —
Over-issue News	30.00/ 35.00	24.00/ 25.00	22.00/ 24.00	25.00/ —
Corrugated Containers	42.00/ 46.00	41.00/ 46.00	41.50/ 43.00	52.00/ —
New Corrugated Cuts	50.00/ 55.00	48.00/ 55.00	55.00/ 65.00	62.00/ —
Double Kraft Ld. Corr. Cuts	115.00/120.00	105.00/120.00	120.00/140.00	130.00/ —
100% Kraft Corr. Cuts	140.00/155.00	125.00/135.00	130.00/170.00	140.00/ —
Used Kraft Bags	85.00/ 95.00	80.00/ 85.00	85.00/116.50	65.00/ —
No. 1 Brown Kraft Paper	90.00/ 95.00	85.00/ 95.00	90.00/110.00	65.00/ —
Super Resorted Br. Kraft	100.00/105.00	95.00/105.00	100.00/125.00	90.00/ —
New Br. Kraft Env. Cuts	160.00/180.00	160.00/175.00	160.00/180.00	150.00/ —
New Br. Kraft Cuts	130.00/170.00	130.00/140.00	150.00/180.00	140.00/ —
No. 1 Gdwd Shvs.	60.00/ 65.00	50.00/ 65.00	75.00/ 85.00	55.00/ —
White Newsblanks	85.00/ 90.00	80.00/ 90.00	90.00/100.00	80.00/ —
No. 1 Flyleaf Shvs.	80.00/ 85.00	80.00/ 85.00	95.00/110.00	100.00/ —
No. 1 Soft Wht. Shvs.	180.00/190.00	170.00/175.00	175.00/195.00	175.00/ —
Super Soft Wht. Shvs.	190.00/200.00	190.00/200.00	190.00/210.00	185.00/ —
Hd. Wht. Shvs.	185.00/210.00	190.00/215.00	190.00/215.00	180.00/ —
Hd. Wht. Env. Cuts	200.00/235.00	200.00/225.00	200.00/235.00	190.00/ —
New Manila Env. Cuts	140.00/150.00	160.00/165.00	140.00/165.00	115.00/ —
Col. Tab Cards	110.00/120.00	110.00/120.00	95.00/150.00	100.00/ —
Manila Tab Cards	170.00/185.00	165.00/190.00	160.00/200.00	165.00/ —
No. 1 Mixed Ledger	90.00/100.00	90.00/ 95.00	87.00/110.00	100.00/ —
White Ledger	130.00/140.00	125.00/130.00	125.00/140.00	125.00/ —
No. 1 Book & Mag.†	30.00/ 35.00	30.00/ 40.00	40.00/ 60.00	35.00/ —
No. 1 Rep'd. Hvy. Books‡	50.00/ 55.00	40.00/ 50.00	60.00/ 75.00	55.00/ —

* Delivered. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

RAG MARKET

New Domestic Cotton Cuttings
OPS Ceiling Price, CPR 28
Delivered Mill Basis

Add 7½% Dealer Commission

No. 1 White Shirts	$21.00
No. 1 Unbichd. Muslins	21.00
Bichd. & Unbichd. Underwears	21.00
Bichd. Canton Flannels	21.00
No. 1 Light Silesias	16.00
No. 1 Light Prints	11.50
No. 1 Blue Overalls	14.50
Suntan Khakis	11.50

Add 10% Dealer Commission

Fancy Shirts	$10.00
Indigo Blues	10.00
Mixed Khakis	8.00
Corduroys	8.00
Cottonades	8.00
No. 1 Washables	6.50

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$5.00/$5.50
Cotton Pants & Overalls	4.25/ 5.00
Thirds and Blues, Repacked	3.75/ 4.00
No. 1 Roofing Rags	3.00/ 3.10
No. 2 Roofing Rags	2.40/ 2.50
No. 3 & 4 Roofing Rags	2.20/ 2.30
Roofing Bagging	2.20/ 2.30

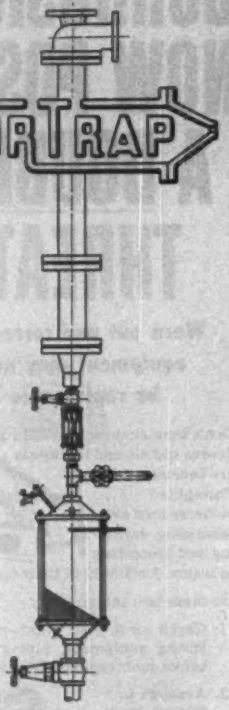
New Foreign Cotton Cuttings
(Prices to Mills, F.o.b. Dock, N.Y.)

	Per 100 lbs.
New Dark Cuttings	$4.75/$5.00
New Mixed Cuttings	4.75/ 5.25
Light Silesias	6.00/ 8.50
Light Flannelettes	7.50/ 8.00
New White Cuttings	nominal
New Unbleached Cuttings	nominal
Fancy Shirt Cuttings	6.50/ 7.50

THERE IS NO SUBSTITUTE FOR EXPERIENCE

Repeat Orders Prove:

There is nothing better than a VORTRAP



Over 265 Mills in the United States are satisfied users.

72.7 Per Cent of these have REPEATED their Vortrap orders.

1 company has purchased over 500 Vortraps

7 companies have purchased over 100 Vortraps each.

13 companies have purchased over 50 Vortraps each.

They ALL Use Vortraps

- High-grade Paper Machines
- Paper Board Machines
- Pulp Mills
- Waste Rag Systems
- Waste Paper Systems

Our Customers Tell Us That Vortraps

- Improve quality
- Increase wire and felt life
- Increase production
- Decrease waste and maintenance
- Upgrade waste paper furnishes

Insist on VORTRAPS For Your Stock Cleaning Problem

NICHOLS ENGINEERING & RESEARCH CORPORATION

70 PINE STREET · NEW YORK 5, N. Y.

40 S. Los Robles Ave., Pasadena 1, Calif. · 1477 Sherbrooke St., W. Montreal 25, Canada

CORROSION NOW POSES A DOUBLE THREAT

Worn out and corroded equipment may not be replaceable

Don't take chances on vital equipment. Scarce metals and materials are becoming scarcer. Farsighted business men are rebuilding, repairing and *protecting* to insure continuity of their operations.

Do these two things today:

1. Check up in your plant—manufacturing equipment, piping, valves, tanks, motors, and all similar items.
2. Arrange to protect them with Amercoat—the corrosion-resistant coatings; each designed to meet specialized conditions.

Note: Most conventional coatings fail under severe service conditions. They are neither designed nor suitable for such applications.

AMERCOAT CORPORATION

A Division of
American Pipe and Construction Co.
4809 Firestone Blvd., South Gate, Calif.

1-51e

Light Prints	6.50/ 7.50
Bleachable Khaki, No. 1	6.00/ 6.50
Unbl. Khaki, No. 1	5.00/ 5.50

Old Foreign Rags

(Prices to Mills, f.o.b. Dock, N. Y.)

	Per 100 lb.
No. 1 White Cottons	nominal
No. 2 White Cottons	nominal
No. 3 White Cottons	nominal
No. 4 White Cottons	nominal
Extra Light Prints	5.50/ 6.00
Old Light Prints	4.50/ 5.00
Med. Light Prints	3.75/ 4.00
Dutch Blue Cottons	4.00/ 4.50
Linsey Garments	2.75/ 3.00
Dark Cottons, Egyptian	2.50/ 2.75
Dark Cottons, European	2.75/ 3.00
Old Shapperies	2.40/ 2.50
New Shapperies	2.50/ 2.75

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$8.25/$8.50
Domestic Gunny, No. 1	7.75/ 8.00
Heavy Wool Tares	8.00/ 8.25
Foreign Manila Rope	8.00/ 8.25
Domestic Manila Rope	7.50/ 8.50
Jute Strings	7.75/ 8.00
No. 1 Sisal Strings	8.00/ 8.25
Mixed Strings	nominal
Paper Mill Tares	5.25/ 5.75
No. 1 Scrap Burlap	
Foreign	6.50/ 6.75
Domestic	7.00/ 7.50
Austr. Wool Pouches	7.50/ 8.50
New Burlap Cuttings	7.50/ 8.00

MATERIALS

Aluminum, sulfate:		
coml. bags, wks. cwt.	1.65	
iron-free c.l.	3.25	
Alcohol, ethyl:		
tax free, dnts. c.l. gal.	1.01	/ 1.05½
deld. East Miss.		
Alcohol, methyl:		
Synthetic, Zone 1, dr.		
c.l. ft. alld. gal.	.44	
Casein, acid-prec.:		
dom. sh. pt. c.l. lb.	.40	/ .41
imp. ex. dock lb.	.35½/	.41
Caustic soda:		
c.l. wks. solid, 76%, cwt.	3.35	
flak. & grd. 100-lb. drums	3.75	
liquid 50% tanks	2.55	
liquid 70% tanks	2.65	
China clay:		
dom. air-float. filler, c.l. wks. ton	10.00	
water-washed, lump, filler	11.00	
coating	17.00	/30.50
imported, ex whse. short ton	15.20	/28.25
Chlorine:		
single-unit tanks, works cwt.	2.70	
multi-unit cwt.	3.20	/ 4.40
Formaldehyde:		
USP, inh. dnts, c.l. wks. lb.	.0625/	.0675
l.c.l., E. wks.	.0675/	.0725
Fuel oil:		
Bunker C, No. 6 Cal. bry tanks, refinery bbl.	1.95	/ 2.15
light bbl.	2.00	/ 2.25
Hydrogen peroxide:		
USP, 35% clys. E. of Miss. lb.	.23½/	.26½
Lime:		
hydrated, bags, wks. Buffalo ton	13.50	
Rosin:		
B gum, drms, c.l. Savan. cwt.	8.00	
G, H, I, K cwt.	8.79	/ —
FF, wood, do. cwt.	7.30	/ —
Rosin size:		
70%, gum & pale grds, tank cars, south, sh. pt. cwt.	6.80	/ 7.00
Salt cake:		
dom. bulk, c.l. wks. ton	17.00	
wks. frt. all. ton	20.00	/22.00
Soda ash:		
light, 58%, bags, wks. cwt.	1.50	
bulk cwt.	1.20	
Sodium silicate 40°:		
turbid, c.l. wks. cwt.	1.30	/
l.c.l. wks.	1.60	/ 1.85
Sodium peroxide:		
dms. c.l. E. of Miss. lb.	.21	
l.c.l. do. lb.	.21½/	.22
Soybean, protein:		
chem. insl, wks. c.l. lb.	.24	/ —
Cinn. and Chic.		
Sulfuric acid:		
60° Be. clys. cl. wks. cwt.	1.75	/
l.c.l. wks. cwt.	2.05	/ 2.85
Sulfur:		
crude, c.l. mines, contract, long ton	21.00	/22.00
f.o.b vessels Gulf	22.50	/23.50
Export, f.o.b. Gulf	25.00	
Sulfur dioxide:		
liquid, coml. cyl. wks. lb.	.09	
multi-unit cars lb.	.0535	
Starches:		
pearl corn, bags, c.l. wks. cwt.	6.02	/ —
white dextrines, c.l. wks. cwt.	7.41	/ —
potato, Idaho, c.l. wks. cwt.	5.50	/
Potato, Maine, c.l. wks. cwt.	5.25	/ 5.50
tapioca, conv. dextrines cwt.	8.25	/ 8.75
medium grds. Gulf and East Coast ports	6.75	/ 7.50
low, Siam, on dock N. Y.	5.75	/ 6.00 nominal
Talc:		
domestic, 50-lb. sacks, c.l. wks. ton	25.00	/30.00
Titanium dioxide:		
anastase, c.l. deld., bags lb.	.21	/ .21½
l.c.l. deld. lb.	.22	/ .22½
rutile, c.l. deld. lb.	.23	/ .23½
l.c.l. deld. lb.	.24	/ .24½

IMPORTS

IMPORTS AT NEW YORK

Week Ending May 5

Newsprint

N. Y. Journal American, Markland, Liverpool, N.S., 571 rolls.

N. Y. Herald Tribune, Markland, Liverpool, 1642 rolls.

N. Y. Daily Mirror, Markland, Liverpool, N.S., 194 rolls.

N. Y. World Telegram, Markland, Liverpool, N.S., 660 rolls.

Brooklyn Eagle, Inc., Markland, Liverpool, N.S., 813 rolls.

Brooklyn Eagle Press, Inc., Markland, Liverpool, N.S., 54 rolls.

Herald Statesman, Inc., Markland, Liverpool, N.S., 28 rolls.

N. Y. Times, Markland, Liverpool, N.S., 426 rolls.

W. D. Peck, Markland, Liverpool, N.S., 148 rolls.

Trade Union Service, Inc., Markland, Liverpool, N.S., 135 rolls.

Advance Pattern Co., Markland, Liverpool, N.S., 61 rolls

Price & Pierce, Ltd., Markland, Liverpool, N.S., 154 rolls.

Richmond Newspapers, Inc., (Richmond, Va.), Markland, Liverpool, N.S., 1768 rolls.

Pepper Printing Co., (Richmond, Va.), Markland, Liverpool, N.S., 139 rolls.

Price & Pierce, Ltd., (Richmond, Va.), Markland, Liverpool, N.S., 216 rolls.

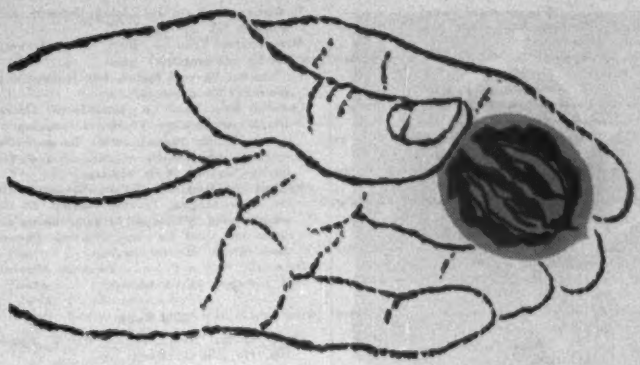
Montmorency Paper Co., Brigus, St. Johns, 3339 rolls.

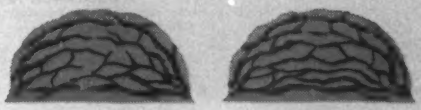
N. Y. Herald Tribune, Fort Avalon, St. Johns, 1079 rolls.

N. Y. World Telegram, Fort Avalon, St. Johns, 1079 rolls.

Wall Street Journal, Fort Avalon, St. Johns, 476 rolls.

Hearst Enterprises, Inc., Fort Avalon, St. Johns, 348 rolls.





Purecal didn't just happen

Sure, Purecal* will save you more titanium dioxide than any other extender-pigment. And it will do that while keeping the same brightness, opacity and hiding power.

But there's more to the story than that. To begin with, we make Purecal by *controlled precipitation* of calcium chloride and sodium carbonate. Temperature, pH, proportion of reactants, rate of addition and other variables are controlled automatically. So that the operator can produce any given particle size — even smaller than the finest ground limestone.

Which particle size? Well, here's how we arrived at Purecal M. We varied particle sizes over a wide range, checked them with an electron microscope. We compared each individual "size range"— one against the other — to find which produced the most opacity, brightness and hiding power. We found the size (.2 microns— same as titanium dioxide) that did that — and that size is Purecal M.

*Trade-mark

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA
CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE
HYDROGEN • DRY ICE • SYNTHETIC DETERGENTS • GLYCOLS
CARBOSE (Sodium CMC) • ETHYLENE DICHLORIDE • PROPYLENE
DICHLORIDE • AROMATIC SULFONIC ACID DERIVATIVES
OTHER ORGANIC AND INORGANIC CHEMICALS

WYANDOTTE CHEMICALS CORPORATION
Wyandotte, Michigan • *Offices in Principal Cities*

Wyandotte
Reg. U. S. Pat. Off.

N. Y. Times, Fort Avalon, St. Johns, 359 rolls.
Bato Co., Fort Avalon, St. Johns, 324 rolls.
(———), Elin Hope, Baie Comeau, 7854 rolls.
N. Y. World Telegram, Cornerbrook, Cornerbrook, 1456 rolls.
Wall Street Journal, Cornerbrook, Cornerbrook, 107 rolls.

Wallpaper

Intermaritime Forwarding Co., American Forwarder, Liverpool, 485 ctns.
S. K. Lonegren, Svaneholm, Gothenburg, 107 ctns.

Printing Paper

Stevens Nelson Paper Corp., Gudrun Maersk, Rouen, 22 cs.
Olympic Shipping Co., Gudrun Maersk, Rouen, 35 cs.
F. C. Strype, N. Amsterdam, Rotterdam, 11 bls. (unsorted).

Baryta Paper

W. Reimerdes, Black Falcon, Hamburg, 31 cs., 22 bbls.

Baryta Coated Paper

E. de Vries Co., Black Falcon, Antwerp, 1 cs.

Drawing Paper

H. Reeve Angel & Co. Inc., Queen Elizabeth, Southampton, 5 cs.
H. Reeve Angel & Co. Inc., Mauretania, Southampton, 2 cs.

Filter Paper

H. Reeve Angel & Co. Inc., Queen Elizabeth, Southampton, 21 cs.
E. H. Sargent, Svaneholm, Gothenburg, 19 cs.
H. Reeve Angel & Co. Inc., Mauretania, Southampton, 14 cs.

Photo Paper

Alco Photo Supply Corp., Queen Elizabeth, Southampton, 8 cs.

Parchment

Meadows Wye & Co., Queen Elizabeth, Southampton, 1 cs.
Meadows Wye & Co., Mauretania, Southampton, 1 cs.
Gerhard & Hey, Mauretania, Southampton, 1 cs.

Grease-proof Paper

Public National Bank Trust Co., J. Schuelte, Antwerp, 55 cs.
World Commerce Co., N. Amsterdam, Rotterdam, 105 cs.

Gummed Paper

B. F. Drakenfeld & Co., American Counselor, Liverpool, 47 cs.
B. F. Drakenfeld & Co., Parthia, Liverpool, 17 cs.

Paper Napkins

Freund-Mayer Co., Texas, Copenhagen, 48 ctns.

Crepe Paper

Brundage Merchandise Co., American Counselor, Rotterdam, 27 cs.

Surface Coated Paper

Gevaert Co. of America, American Counselor, Rotterdam, 53 cs.
Gevaert Co. of America, Black Falcon, Antwerp, 57 cs.
Gevaert Co. of America, Gudrun Maersk, Antwerp, 75 cs.

Paper Serviettes

(———), Parthia, Liverpool, 12 crates.

Tissue Paper

B. F. Drakefeld & Co., Parthia, Liverpool, 19 cs.

Miscellaneous Paper

Henle Waxed Paper Manufacturing Co., Svaneholm, Gothenburg, 27 rolls.

Rags, Baggings, etc.

(———), Newberry Victory, Piraeus, 189 bls. rags.
E. J. Keller Co. Inc., Newberry Victory, Piraeus, 86 bls. rags.
A. W. Fenton Co., Flying Enterprise, Rotterdam, 38 bls. bagging, 128 bls. scrap bagging.
National City Bank, Gudrun Maersk, Rotterdam, 64 bls. sisal strings.
(———), Exceller, Venice, 149 bls. old jute rags.
Midwest Waste Materials Co., Weissensee, Antwerp, 161 bls. scrap bagging.
Midwest Waste Materials Co., Johann Schuelte, Antwerp, 136 bls. scrap bagging, 6 bls. old nylon stockings, 20 bls. bagging.
E. Butterworth & Co. Inc., Johann Schuelte, Antwerp, 79 bls. old bagging.
Manufacturers Trust Co., Black Falcon, Antwerp, 111 bls. old bagging.
1st National Bank of Boston, Elin Haven, Alexandria, 19 bls. cotton rags.
Chemical Bank Trust Co., Elin Haven, Alexandria, 75 bls. burlaps, 74 bls. old bagging, 38 bls. old Hessian bagging, 70 bls. Hessian tares.
A. Siegle Corp., Elin Haven, Alexandria, 67 bls. Hessian bagging, 58 bls. bagging.
National City Bank, Elin Haven, Alexandria, 286 bls. waste bagging, 121 bls. bagging, 84 bls. scrap bagging, 272 bls. old bagging, 106 bls. old cotton rags, 130 bls. rags, 184 bls. Hessian tares, 131 bls. Hessian baggings.
Darmstadt, Scott & Courtney, American Forwarder, Liverpool, 56 bls. bagging.

Old Rope

Chase National Bank, Gudrun Maersk, Rotterdam, 116 coils old Manila rope.
C. Smiles, American Forwarder, Manchester, 250 bls. old hemp cordage.
International Purchasing Co., American Forwarder, Dublin, 85 coils old rope.

Casein

Gorlyn Plastic Co., Stad Leiden, Melbourne, 1000 bags (rennet).
(———), Stad Leiden, Melbourne, 1720 bags (lactic).
Covington Products Co., Stad Leiden, Melbourne, 2000 bags (rennet).
W. Diehl Co., Stad Leiden, Melbourne, 1200 bags (lactic).
(———), (Camden, N.J.), Bowmonte, Buenos Aires, 7000 bags.
F. H. Paul & Stein Bros., De Grasse, Havre, 501 bags.
Bank of The Manhattan Co., Black Falcon, Rotterdam, 500 bags.
Chase National Bank, Ribeira Grande, Ponta del Gada, 2438 bags.

Woodpulp

Perkins Goodwin & Co., Svaneholm, Gothenburg, 304 bls. woodpulp.
Riegel Paper Corp., Cornerbrook, Cornerbrook, 1200 bls. sulphite pulp.

Woodpulp Boards

Parsons & Whittemre, Inc., Cornerbrook, Cornerbrook, 386 rolls.

IMPORTS AT BOSTON

Week Ending May 5

Stone & Downer Co., American Forwarder, Liverpool, 29 ctns. wallpaper.
E. Butterworth & Co. Inc., American Forwarder, Liverpool, 72 bls. old sisal strings.
American Cyanamid Co., Gird, Buenos Aires, 220 bags casein.
P. A. Dunkel, Bowmonte, Buenos Aires, 1000 bags ground lactic casein.
Stone & Downer Co., American Counsellor, Liverpool, 6 cs. gummed paper.

IMPORTS AT BALTIMORE

Week Ending May 5

1st National Bank of Boston, Exceller, Venice, 87 bls. paperstock.

IMPORTS AT PHILADELPHIA

Week Ending May 5

Evening Bulletin, Cornerbrook, Cornerbrook, 1788 rolls newsprint.
Philadelphia Inquirer, Cornerbrook, Cornerbrook, 1075 rolls newsprint.
Schwartz & Co., Gudrun Maersk, Antwerp, 4 cs. parchment paper.
Chemical Bank Trust Co., Black Falcon, Rotterdam, 62 bls. old bagging.
E. J. Long, American Forwarder, Manchester, 83 bls. old bagging.

Protect your investment....
with a SMITH & WINCHESTER
MODEL "E"
UNDERCUT
TRIMMER
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THE SMITH & WINCHESTER Manufacturing Company
SOUTH WINDHAM, CONN.

IMPORTS AT NORFOLK

Week Ending May 5

Dixie Jute Bagging Co., American Forwarder, Manchester, 42 bls. old bagging.

(———), American Forwarder, Manchester, 39 bls. gunny bagging.

Newspaper Printing Corp., Cornerbrook, Cornerbrook, 683 rolls newsprint.

Herald Sun Paper, Cornerbrook, Cornerbrook, 92 rolls newsprint.

Virginia Paper Co., Cornerbrook, Cornerbrook, 101 rolls newsprint.

Charlotte Observer, Cornerbrook, Cornerbrook, 238 rolls newsprint.

Danville Register, Cornerbrook, Cornerbrook, 190 rolls newsprint.

Kannapolis Independent, Cornerbrook, Cornerbrook, 87 rolls newsprint.

Norfolk Newspapers, Cornerbrook, Cornerbrook, 458 rolls newsprint.

Fayetteville Observer, Cornerbrook, Cornerbrook, 147 rolls newsprint.

Ennis Tag & Sales Book Co., Cornerbrook, Cornerbrook, 191 rolls newsprint.

Raleigh News & Observer, Cornerbrook, Cornerbrook, 500 rolls newsprint.

Rocky Mount Telegram, Cornerbrook, Cornerbrook, 36 rolls newsprint.

Richmond Newspapers, Inc., Cornerbrook, Cornerbrook, 293 rolls newsprint.

Winston-Salem Journal & Sentinel, Cornerbrook, Cornerbrook, 615 rolls newsprint.

Salisbury Post, Cornerbrook, Cornerbrook, 190 rolls newsprint.

Suffolk News Herald, Cornerbrook, Cornerbrook, 37 rolls newsprint.

Asheville Citizen Times, Cornerbrook, Cornerbrook, 396 rolls newsprint.

Wilmington Star News, Cornerbrook, Cornerbrook, 97 rolls newsprint.

NEW LITERATURE

Domestic Distribution Dept., Chamber of Commerce of the U. S. Book, "Cost of Distribution Services 1950," 145 pg., $1.00. Prepared by Philip W. Clark, Marketing Research Specialist, under direction of Chas. M. Isaac, manager of the Chamber's Domestic Distribution Department, the report purports to improve the general understanding of the important field of merchandise distribution. Contents include studies on features of merchandising, financing, advertising, specialized service equipment, physical distribution, etc.

Superintendent of Documents, U. S. Government Printing Office. Book, "Schedule A, Statistical Classification of Commodities Imported into the U.S.," Aug. 1, 1950 Edition. A revision of the Sept. 1, 1946 edition, this volume also includes the modified rates of duty and changes in classification necessary to reflect concessions negotiated at Geneva, Switzerland and at Annecy, France. Price $2.50 for domestic subscribers, $3.50 for foreign. Order by Catalog No. C 3.150:A/950.

American Hard Rubber Co. Bulletin, "Ace-Saran and Ace-Parian—Chemical Resistant Plastics." Engineering data on tubing, pipe, valves and fittings of these polyethylene plastics. Includes tables of properties and resistance to a long list of common chemicals.

Armco Steel Corp. Booklet, "Armco Precipitation Hardening Stainless

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Very low water transmission rates.
Free from objectionable odors.
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Excellent heat sealing characteristics.
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Steels," 16 pp. Describes the properties, available forms and fabrication of both Armco 17-4 PH and 17-7 PH, new stainless steels.

Askania Regulator Co. Bulletin No. 139, "Controls for Pressure Flow Proportioning of Liquids and Gases." Technical data on pressure control, flow control, adjusting systems, hydraulic stabilizer, etc. Includes diagrams of basic applications. Descriptive paper No. A, "Non-Contact Edge Positioning Controls and Web Handling Systems."

Shartle Bros. Machine Co. Bulletin, "Lubrication Guide," 16 pp. Discusses lubrication and preventive maintenance, lubricating intervals, pressure gun lubrication of bearings, circulation oil systems, splash or bath system of oiling, miscellaneous lubricating requirements, descriptive outline of lubricants, value of inspections.

The Borden Co. General Protovac Bulletin No. P-16-7D. Describes all Borden Modified Caseins and Caseinates. Bulletin No. P-1. Covers the use of Protovac caseins in manufacturing wallpaper.

Dilts Machine Works. Bulletin (6-DM), "Fast Growing Dilts Line of Converting Equipment." Illustrates and describes six converting machines: the Waxer, the Board Laminator, the Embosser, the Kohler Unwinder with Flying Paster, and the Kohler Winder with Flying Starter.

Eriez Mfg. Co. Catalog 15, "Non-Electric Permanent Magnetic Separators for Tramp Iron Removal." Describes and illustrates specifications and installation of non-electric magnets. Bulletin 601, "Non-Electric Permanent Magnetic Drum Separators to Remove Ferrous Material." Includes general information form.

Farquhar, A. B., Co., Special Machinery Div. Sales copy on Farquhar Portable Hi-Pressure Cleaning Unit.

Gardner Board & Carton Co. Booklet, "Because the Youth of America will Shape the Future of America . . ." Announce the establishment of the Gardner Scholarship Fund.

General Electric Co. Bulletin GEA-5520, "Drives for Pulp Mills." Describes and illustrates drives for barker, saws, chippers, grinders, etc. Shows them in operation in existing mills.

B. F. Goodrich Co. Booklet, "One Week for America." Outlines the methods used in a successful campaign for purchase of U. S. Saving Bonds.

Prentice-Hall. Book, "The Development of American Industries," $8.00. Includes a chapter on "The Pulp & Paper Industry," by Dr. Louis T. Stevenson, Economist for the American Paper and Pulp Assn. May be obtained through *Paper Trade Journal.*

Radio Corp. of America. Reprint, "Electronic Inspection," by Paul A. Greenmeyer. Shows how the RCA Metal Detector assures production of a pure product; how the human element is eliminated from the inspection process; how products may be automatically inspected even after packaging; and how the device pays dividends in providing insurance against false claims. Technical Bulletin, "Electronic Metal Detector." Includes bulletin on application data.

Milton Roy Co. Bulletin No. 4512, "Welcome to Milton Roy." Invitation to first Annual Open House. Presents shop views of chemical and high pressure pump production.

Signode Steel Strapping Co. Customer magazine, "Signode Seal," Spring edition. Features the packing and shipping of Vermont marble used in the UN Secretariat Building; also article by J. M. Moon, Director of Sales, describing the serious shortage of steel strapping, etc.

Wheelco Instruments Co. "Wheelco Comments." Features temperature control at Sierra Talc and Clay Co., Los Angeles, to achieve product uniformity of adsorbent clays. Highlights "Instrumentality in Action."

PEOPLE

JOHN F. HAGAR of Green Bay, Wis., has been appointed to the sales management staff of the Gardner Board and Carton Co.

N. JERRY JERAN has been appointed treasurer of Lesavoy Industries, Inc., operators of paper mills in Cheboygan, Mich. and Newark, Ohio and a pulp mill in Stevens Point, Wis.

LEO GEISER has been named director of production of Champion Paper & Fibre Co. He becomes a member of the company's administrative group, with staff supervision over all pulp, paper, board, and finishing operations, as well as scheduling and inspection functions, in the Champion mills located at Hamilton, Ohio; Canton, N. C.; and Houston, Texas.

HERVEY J. SKINNER has retired from Skinner & Sherman, Inc. He has been a chemical consultant for over forty years. For seventeen years he was with Arthur D. Little, Inc., and in 1921 he organized the firm of Skinner, Sherman & Esselen, Inc., which later became Skinner & Sherman, Inc.

DAVID R. ARNOLD, has been appointed to the newly-created position of director of management planning for The Gardner Board and Carton Co.

WILLIAM T. MAY, JR. has been elected a vice-president of Robert Gair Co., Inc., in charge of container operations.

ROBERT E. YOUNG has been elected a director of the Ohio Boxboard Co., Rittman, Ohio, and JAMES C. MORRIS has been named vice-president of production. Robert E. Young replaced his father, Don Young, on the board of directors.

DABNEY G. MILLER, vice-president of the John Leslie Paper Co. and in charge of its St. Paul division, retired May 4 after 32 years of service with the company.

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E. NORVAL HUNTER was elected a vice-president of the Kalamazoo Vegetable Parchment Co. on April 27 and placed in charge of all of KVP's Canadian operations. These operations include The KVP Co. Ltd., Espanola, Ont., of which Mr. Hunter is a director, vice-president, and secretary; and Appleford Paper Products Ltd., with plants at Hamilton, Ont., and Montreal, Que.

FINANCIAL

St. Lawrence Paper Mills has declared a dividend of $1.50 on first preferred stock and 60 cents on second preferred stock, both payable July 25 to stockholders of record July 3.

St. Lawrence Corp., Ltd., has declared a dividend of 50 cents on first preferred stock and another dividend of 18¾ cents on second preferred stock, both payable July 25 to stockholders of record July 3.

Docskin Products, Inc., reports sales for the first quarter of 1951 totaled $3,650,000 as compared to $2,600,000 for the same period last year — an increase of over $1 million. Net profits after taxes were $132,000 for the quarter.

Rayonier Inc. in its first quarter report to stockholders shows an increase in net sales of approximately one-third, up from $14,945,295 in the first quarter of 1950 to $20,518,395 for the first three months of 1951. Earnings after all charges rose to $3,114,341 for the three month period, compared with $2,322,050 for the first quarter of the previous year. After provision for preferred dividends this represents $2.82 per common share, compared with $2.02 in 1950.

Marathon Corp. declared regular dividends on the company's common stock of 50 cents a share, payable May 31 to stockholders of record at the close of business May 10. The preferred dividend is $1.25 a share, payable July 2, to stockholders of record June 20. Both dividends are net to stockholders, as the company assumes payment of the Wisconsin privilege dividend tax.

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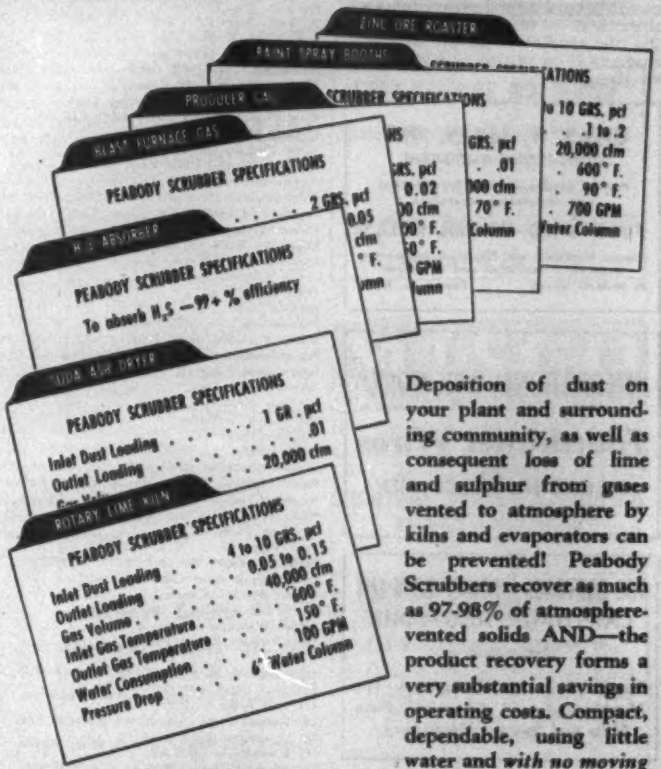

Deposition of dust on your plant and surrounding community, as well as consequent loss of lime and sulphur from gases vented to atmosphere by kilns and evaporators can be prevented! Peabody Scrubbers recover as much as 97-98% of atmosphere-vented solids AND—the product recovery forms a very substantial savings in operating costs. Compact, dependable, using little water and *with no moving parts*, Peabody Scrubbers, proved by 20 years of use, may well offer startling economies and cleaner processing for your plant.

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Union Bag & Paper Corp's. net sales and net income for the three months ended March 31 were the largest for any quarterly period in the company's history. Net income in the first quarter, after provision for taxes, was $3,702,693, equal to $2.45 per share on the outstanding 1,508,598 shares of capital stock. This compares with net income in the first quarter of 1950 of $2,199,395 (revised), or $1.46 per share and net income for the fourth quarter of 1950, after year-end adjustments, of $3,506,907 or $2.33 per share on 1,508,298 shares outstanding.

Oswego Falls Corp., will increase the issued and outstanding $5 par common stock of the company from 240,000 to 480,000 shares. Holders of the $5 par value common stock will be issued one additional share for each share held on May 4. It is expected that the certificates for the additional shares will be mailed to stockholders on May 15.

CHAS. T. MAIN, INC.
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REFINER CORP., Trenton 6, N. J.

Financial News

STOCK REPORT

	Per Share Earnings: Calendar Year 1949	Per Share Earnings: 12 Mo. to Approx. 12/31/50	Indic Annual Divid. Rate	May 9 Approx. Market Price
PREFERRED STOCKS				
Armstrong Cork Co. $3.75 Cum.	$40.95*	$48.80*	$3.75	$97½
Armstrong Cork Co. $4.00 Cum. Conv.	40.95*	48.80*	4.00	118½
Celotex Corp. 5% Cum.	6.80c	14.34b	1.00	16¾
Champion Paper & Fibre $4.50 Cum.	60.09f	103.62	4.50	105½
Container Corp. of Amer. 4% Cum.	89.52	153.72	4.00	100½
Crown-Zellerbach $4.20 Cum.	54.38c	67.60b	4.20	103½
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	16.31	2.50	68¾
Flintkote Co. $4.00 Cum.	62.70	96.36a	4.00	101¼
Robert Gair Co., Inc., 6% Cum.	13.79†	24.54†	1.20	19¾
International Paper Co. $4.00 Cum.	224.55	289.77	4.00	103½
Kimberly Clark Corp. 4% Cum.	85.27	114.95b	4.50	108¾
MacAndrews & Forbes 6% Cum.	61.59	62.50	6.00	134½
Mead Corp. 4¼% Cum.	51.37	106.16a	4.25	91½
Mead Corp. 2% Cum. Conv. 2nd	21.35*	45.61*a	2.00	65
Pabco Products, Inc., 4% Cum. Conv.	56.46	120.13	4.00	101½
Rayonier, Inc., $2 Cum.	9.54	18.51a	2.00	37¼
St. Regis Paper Co. 4.40% 1st A	30.74	82.64a	4.40	93
Scott Paper Co. $3.40 Cum.	51.15*	65.41*	3.40	95½
Scott Paper Co. $4.00 Cum.	51.15*	65.41*	4.00	105
Sutherland Paper 4¼% Conv.	46.92	90.10a	4.25	137½
U. S. Gypsum Co., 7% Cum.	283.37	348.48	7.00	180½
United Wallpaper Inc., 4% Cum. Conv.	2.14	17.78a	2.00	26¾
West Virginia Pulp & Paper 4½% Cum.	81.28c	99.26b	4.50	109½
COMMON STOCKS				
APW Products Co.	(d)0.81	0.89	—	7½
American Writing Paper Corp.	.04	2.02	0.50	10½
Armstrong Cork Co.	6.57	8.13	3.75	58½
Celotex Corp.	1.63c	3.78b	1.00	17
Certain-Teed Prods. Corp.	2.84	3.92	1.50	16¾
Champion Paper & Fibre	5.13f	9.44	3.00	59
Congoleum Nairn Co.	3.04	3.29	2.00	25
Container Corp. of America	4.23	7.20a	2.50	38
Crown-Zellerbach	6.02c	7.34b	3.10	55¾
Dixie Cup Co.	7.44	12.18	3.00	68½
Eastern Corp.	0.04	4.30	1.00	22¾
Flintkote Co.	4.33	6.19a	3.00	30¾
Robert Gair Co., Inc.	2.11†	3.92†a	0.70	14¾
Great Northern Paper Co.	4.87	4.33	3.00	51
International Paper Co.	7.12	7.92a	3.00	55¼
Johns-Manville Corp.	4.83	7.22	3.50	56¾
Kimberly Clark Corp.	5.29	6.28b	2.40	46¼
MacAndrews & Forbes Co.	3.64	3.71	3.00	34½
Marathon Corp.	3.29c	5.40b	2.00	47¾
Mead Corp.	4.10	6.01a	2.20	26½
National Container Corp.	0.95	2.41	0.80	13¾
Pabco Products, Inc.	0.85	1.87	0.60	19¾
Rayonier, Inc.	4.75	10.41a	3.00	50¾
Ruberoid Co.	7.93	9.64	3.50	57½
St. Regis Paper Co.	0.91	2.64a	0.60	14½
Scott Paper Co.	3.04	3.90	2.00	49½
Sutherland Paper Co.	4.62	8.48	2.75	54¾
Union Bag & Paper Corp.	5.01	8.21a	3.00	47¾
United Board & Carton	(d)1.61b	2.71g	1.00	19½
U. S. Gypsum Co.	13.51	16.70	10.00	114¾
United Wallpaper	(d)0.01	0.48a	—	3¾
West Virginia Pulp & Paper	8.38a	13.73b	5.00	88¾

(a) 12 months to 3/30/51
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(e) 12 months to 10/31/50
(f) 9 months to 12/31/49
(g) 12 months to 2/3/51
(h) 12 months to 1/31/51
(*) Earnings per combined preferred shares
(†) Includes domestic and Canadian subsidiaries and 60% equity in Southern Paperboard Corp.

Powell River Co., Ltd., Vancouver, B. C., plans to split its stock on a three-for-one basis. A special meeting of the company's shareholders to approve this move will be held at a date to be made known later.

Company will also introduce with the June 15 dividend a regular rate of 75 cents per share quarterly on present stock, 25 cents quarterly on new stock. An extra 75 cents on present stock will also be declared at the same time and 25 cents on new stock.

Nekoosa-Edwards Paper Co., Port Edwards, Wis., has declared a dividend of 35 cents per share, payable June 8 to stockholders of record May 15.

The three percent Wisconsin privilege tax will be absorbed by the company rather than being deducted from the dividend payments at source.

MacLaren Power and Paper Co., Ltd., has declared a dividend of 50 cents and extra 50 cents, payable May 31 to stockholders of record May 5.

SUPPLIERS

AMERICAN ANODE, INC., has lent Robert A. Lees, manager of the Akron laboratories to the National Production Authority as an advisor on the allocation of liquid latex.

FREEPORT SULPHUR CO. will continue to allocate sulphur to domestic users, following the government's order establishing the second quarter quota for overseas shipments.

The present allocation program, in effect since January 1, is based on 85 percent of purchases by consumers for the year ended September 30, 1950, and is necessitated, Langbourne M. Williams, Jr., president, declared, by the government's policy of setting aside substantial tonnages of sulphur for allied nations.

Mr. Williams said the industry's export quota for the quarter ending June 30 had been set at 250,000 long tons of crude sulphur. The first quarter quota of 200,000 tons was later increased to 230,000 tons. In addition, in both quarters, 7,500 tons were allocated for export in the form of refined and processed sulphur.

Despite the abnormal demand, Freeport and others in the industry are continuing to fill a high percentage of orders. Current production is about two and a half times the 1935-39 average. In 1950, U. S. output of brimstone, cheapest of all types of sulphur, was 5,350,000 long tons.

NOPCO CHEMICAL CO. has transferred John J. Ryan to the sales force of the newly formed Pacific Division. Prior to his new appointment, Mr. Ryan was sales representative for the company in the New York-Pennsylvania area.

George R. Zust, former assistant manager of the company's Textile Specialties Division, will replace Mr. Ryan in the New York-Pennsylvania area.

Theodore R. Colville

BYRON JACKSON CO. has assigned the management of all advertising and sales promotional activities to Theodore R. Colville. He will be in charge of the advertising for all four Divisions. Mr. Colville was previously associated with the General Electric Co. in Schenectady, N. Y., engaged in the advertising activities of the Chemical Department of that organization.

BLACK - CLAWSON - SHARTLE-Dilts have completed arrangements for the manufacture of a limited line of Shartle Bros. stock preparatory equipment in Italy. The manufacture of this equipment will be handled through the Milan, Italy, offices of Dr. Milos Krofta, Black-Clawson representative in Italy and Austria. This equipment including Hydrapulpers, Hydrafiners, jordans, screens and replacement parts will be manufactured from American drawings by Fabbrica Macchine S.P.A. of Naples, Italy.

GEIGY CO., INC. (Dyestuffs Division) announces the opening of new and improved facilities at 3901 M street, Philadelphia, Pa. A new and modern laboratory, plus greatly increased warehousing and shipping facilities are provided. R. L. Quinn will become the new manager.

POTDEVIN MACHINE CO.'s new one-story brick modern industrial building is now under construction.

The new radiant-heated building with manufacturing space of about 102,800 square feet, is located in Teterboro, N. J. Plant No. 1, where a wide variety of paper bag and printing machinery is constructed and the plant No. 2 Coating Machine Division will be housed in this new building.

Sandy Hill
IRON & BRASS WORKS
PAPER MACHINERY SPECIALISTS
HUDSON FALLS, N. Y.
Builders of
SANDY HILL, BERTRAMS AND KANTH EQUIPMENT

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Semi-Chem. and Chemical Pulp Processes
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Ernest Smith

The Gibbs-Brower Co., Inc., #21 East 40th street, New York 16, N. Y., dealers and agents in paper converting machinery and printing equipment, have appointed Ernest Smith of 965 Cumberland Avenue, Hamilton, Ont., Canada, their sole representative in the Dominion.

Mr. Smith was formerly vice-president of the Appleford Paper Products, Ltd., and production manager of their Hamilton and Montreal plants for many years previous to his retirement in 1950. Mr. Smith was also recently appointed to the sales staff of the International Wares, of Agincourt, Ont., Canada.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Mar. 31	Apr. 7	Apr. 14	Apr. 21	Apr. 28
1951	101.3	102.7	103.1	105.1r	101.0
	Apr. 1	Apr. 8	Apr. 15	Apr. 22	Apr. 29
1950	97.0	94.6	94.4	96.9	95.6

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	92.6	93.6	94.7	95.4	96.4	97.7	85.3	99.6	96.1	101.0	100.3‡	93.7‡	95.8‡
1951	99.5‡	101.5‡	102.3‡	103.1‡									

‡ Preliminary.
r Revised.

COMPARATIVE YEARLY SUMMARIES

	1944	1945	1946	1947	1948	1949	1950	1951
Year to Date	86.3	88.5	100.1	108.1	100.9	90.6	95.2	101.5
Year Average	88.1	89.4	100.1	104.3	96.2	88.6	95.8‡	

PAPERBOARD OPERATING RATIOS†

	Mar. 31	Apr. 7	Apr. 14	Apr. 21	Apr. 28
1951	98	106	102	107	105
	Apr. 1	Apr. 8	Apr. 15	Apr. 22	Apr. 29
1950	93	93	88	93	92

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	88	92	91	92	91	94	82	100	96	102	101	95	94
1951	102	105	104	105									

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: The chart shows the ratio through December 1950 on the basis of 6-day capacity. Beginning with January 1951 the ratio is shown on the new basis of normal 6- and 7-day capacities. Corresponding weekly and monthly ratios for 1950 on the new basis, shown in the tables above, are somewhat lower.

Paperboard operating ratios continue on the basis of a 6-day week.

† Per cents of operation based on "inch-hours" reported to the National Paperboard Association.

GRAVER WATER CONDITIONING CO., manufacturer of equipment for all water-treating processes, has named Flagg, Brackett & Durgin, Inc., Park Square Bldg., Boston 16, Mass., as its New England representative. This concern has specialized in engineering sales work on power plant equipment for approximately thirty years.

WORTHINGTON PUMP AND MACHINERY CORP. has named A. F. Reinking, formerly assistant sales manager, manager of the Steam Turbine Sales Division of Worthington Pump and Machinery Corp. Mr. Reinking will make his headquarters at Worthington's Wellsville plant.

LEEDS & NORTHRUP CO., Philadelphia manufacturers of electrical measuring instruments, automatic controls, and heat-treating furnaces, will move its Boston office to 430 Lexington Avenue, Auburndale (Boston 66), from its former location, 31 St. James Avenue, about June 1.

POTDEVIN MACHINE CO., of Brooklyn, N. Y., has appointed Joseph S. Hawkins, formerly sales manager of the Coating, Labeling and Latex Cementing Division, general manager of the same departments. Mr. Hawkins has been associated with the Potdevin Machine Co., for the past 22 years.

Frank B. Wolcott

WYANDOTTE CHEMICALS CORP. appointed Frank B. Wolcott general manufacturing manager. Mr. Wolcott was formerly in charge of manufacturing operations for the New Jersey Zinc Co.

OBITUARIES

Dr. Walter W. Thomson, associate editor of the *Canadian Journal of Research* and a former member of the staff of the Forest Products Laboratories, died in Ottawa, Ont., as the result of a heart attack.

William C. Powers, 80, prominent newsprint authority for the past half-century, died in London, England, April 25.

Mr. Powers' association with the newsprint industry began with the Glenn Manufacturing Co., at Berlin Falls, N. H., in 1888. From 1898 to 1910 he was manager of the Great Britain division of the International Paper Co. From 1912 to 1919 he was manager of sales and a director of the Great Northern Paper Co. For the past 20 years he was associated with Peter Dixon and Sons, Ltd., newsprint manufacturers with mills at Grimsby and Oughtibridge, England. His connection with the paper and newsprint industry extended over a period of 63 years.

The Hinde & Dauch CRUSH TESTER

TO CONTROL QUALITY OF PRODUCT—A practical, heavy duty instrument for ring stiffness tests of liner-board and bar-boards and flat crush tests of combined corrugated board. Measurements uniformly accurate. Recording mechanism independent of machine elements, eliminating friction; plunger and plate free of lateral movement.

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STRIP CUTTERS FOR UNCOMBINED BOARD TESTS

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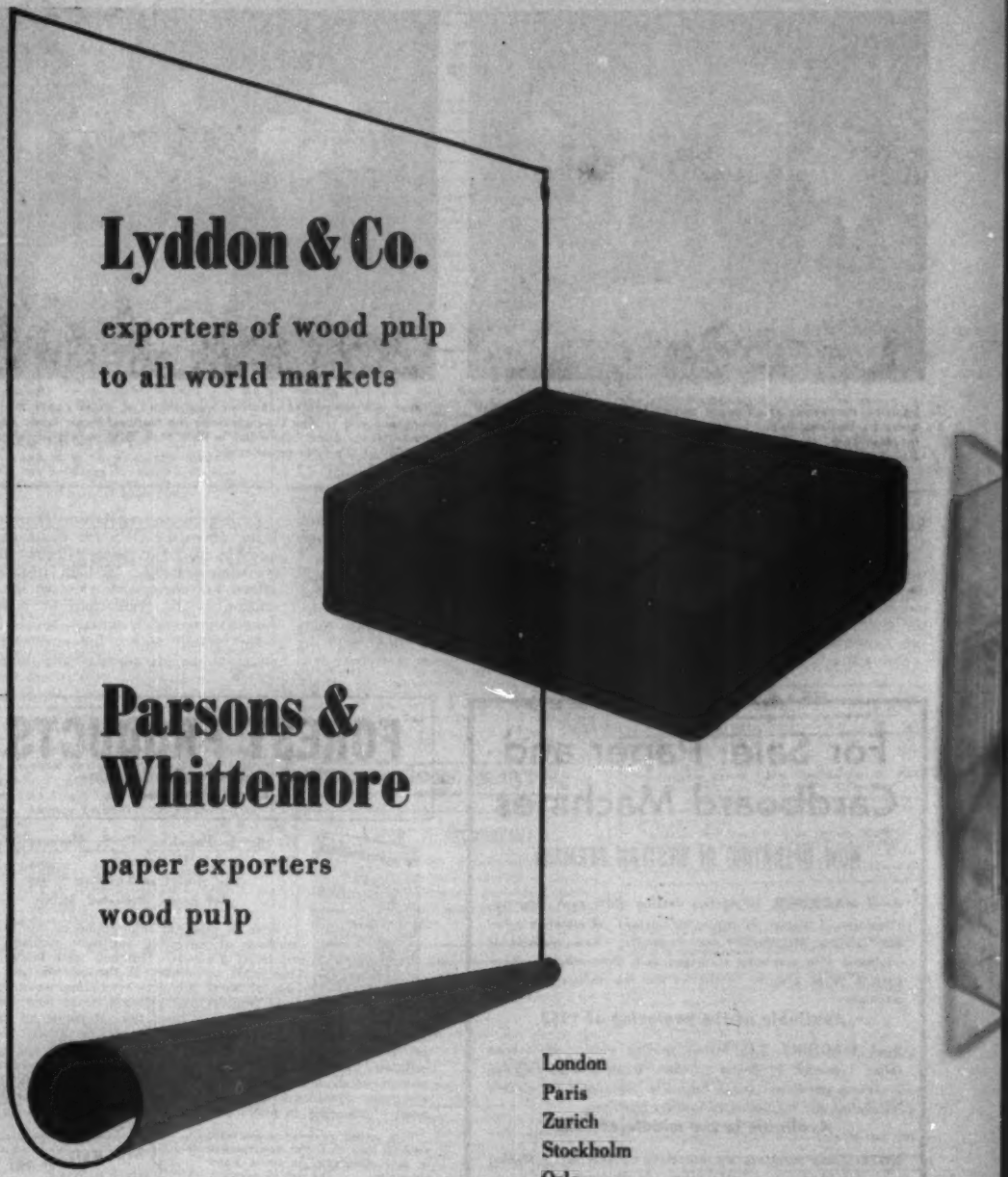
exporters of wood pulp
to all world markets



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paper exporters
wood pulp

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10 East 40th Street, New York 16, N. Y.

Enjoying themselves at all paper service luncheon and fashion show given by National Paper Trade Assn. during their recent convention in New York, are (left to right) Eileen Mullen, Mary Cosgrove, Isabel M. Shepard and Florence Petris, of the NPTA.

These two remarkable creations were shown at an all paper service luncheon and fashion show given by the National Paper Trade Assn. during their recent convention in New York. Both were made almost entirely of Lily-Tulip paper cups.

REACTIVATE N.A.W.M.P.

CHICAGO—Reactivation of the National Assn. of Waste Material Producers to promote the interests of its members and to represent them before the OPS, was announced by John T. Kiley, executive secretary.

Mr. Kiley, who is president of the James Flett Organization, Inc., said that all industrial scrap producers are eligible to membership.

The association, formed in 1932, was instrumental in obtaining recognition and relief for its members during the time when NRA was in force and, more recently, when OPA was in force.

Ceiling price regulations are now being drawn by OPS for waste paper and for used barrels and drums—both war-scarce items. In both instances, efforts are being made to resist the inclusion in the regulations of unwarranted price differentials to dealers which would reduce the normal revenues of the producers of the items.

For Sale: Paper and Cardboard Machines

NOW OPERATING IN WESTERN GERMANY

A—2 MACHINES, 2.7 Meters working width each, with suction roller, 3 presses, 42 drying cylinders, 1 refrigerating cylinder, glazing attachment, and Paperoller. One machine is equipped with a moving screening unit. Both machines have parallel drive, electric installation and the necessary auxiliary machines.

Available at the beginning of 1952

B—1 MACHINE, 2.85 Meters working width, with suction roller, 3 presses, 21 drying cylinders, 1 refrigerating cylinder, 1 glazing attachment and 1 Paperoller, parallel drive, electric installation and the necessary auxiliary machines.

Available in the middle of 1952

NOTE: These machines are especially suitable for producing newsprint, illustration printing paper, and other papers.

C—1 ROUND-SIEVE CARDBOARD MACHINE, 1.7 Meters working width, preliminary couch press unit, 30 drying cylinders and 2 glazing cylinders 3600 and 2500 mm ϕ, including drive and main auxiliary machines.

Available in October, 1951

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Their Sources, Production And Utilization

By A. J. Panshin, E. S. Harrar, W. J. Baker, and P. B. Proctor

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549 pages, illustrated, $6.00

Here is practical information on the origin, methods of converting, and most profitable use of forest products. This new book brings you the latest techniques in the manufacture and use of wood products—including wood furniture, veneers and plywood, wood flour, round timbers and railroad ties. It points up recent developments in the production of products derived through chemical processes—including pulp and paper, insulation materials, cellulose, filaments and films, carbonization and destructive distillation of wood. Miscellaneous wood products such as maple sirup and sugar, dyes, tannins, etc. are likewise discussed from the standpoint of efficiency in producing and using.

Turn to this guide when you want valuable data on recent developments in acid stimulation in naval stores operations . . . the use of synthetic resins in plywood manufacture . . . the application of radio frequency to wood gluing and pulping of wood, and many other advances in technology. The technical gases of manufacturing are treated in clear everyday language, and numerous illustrations and charts simplify your understanding of topics discussed.

New Material on:

- Thermal and Sound Insulation
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Chief Chemist to head up technical staff bleached kraft and pulp mill and several other chemists and laboratory men; master mechanics; plant engineers, electrical engineers, designers and draftsmen; reserve shipper for board mill; cost accountant; salesmen to sell paper mill equipment; machine tenders and beat tenders.

LIST YOUR CONFIDENTIAL APPLICATION WITH US to keep informed of attractive positions open in the pulp and paper mills.

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SPECIALISTS IN PLACING PULP AND PAPER MILL EXECUTIVES
M-11

MANAGER who can supervise the production and sell the output of a plant converting waste papers into high quality pulps by a new and unique process. Applicant must have up-to-date technical knowledge and preferably sales experience in the pulp and paper industry, and possess the qualifications necessary for the successful management of an expanding business. This is an excellent opportunity. Address Box 51-213 care Paper Trade Journal. M-11

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GRADUATE MECHANICAL ENGINEER—With sufficient ability and experience in the manufacture of fine papers to be responsible for development program and to design, layout and supervise installation of equipment in midwestern mill. Address Box 51-151 care Paper Trade Journal. My-25

WANTED — EXPERIENCED, COMPETENT PURCHASING AGENT for an eastern chipboard mill. Must be capable and fully experienced. Furnish details of experience, capabilities and references. Excellent opportunity. Address Box 51-153 care Paper Trade Journal. TF

CHEMICAL ENGINEER to fill position of Assistant Quality Control Supervisor in large fiber insulation board manufacturing plant, located in South. All replies confidential. Our personnel know of this ad. Address Box 51-200 care Paper Trade Journal. M-18

PAPER MILL CHEMIST—Must have thorough knowledge of high grade boxboard, test liner and imitation kraft. State full experience, qualifications and references in first letter. Address Box 51-212 care Paper Trade Journal. M-11

CONSULTING FIRM now organizing in Southeast, needs Engineers and Draftsmen with Kraft pulp and paper experience in structural, mechanical, piping and electrical design and layout. Good chance to get in on start with incentive pay and security. In first letter please include full details on training and experience (salaries in each case), references, draft or military status, etc. Address Box 51-225 care Paper Trade Journal. M-18

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Capable, cost minded administrative executive, age 40, available immediately. Fully experienced in multi-plant paperboard, folding carton and printing industry. Box 51-197 Paper Trade Journal. M-11

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CHEMICAL ENGINEER—Experienced on development of functional papers, plastic coatings, production planning with some executive and sales service background. Desire responsible position in midwest area. Address Box 51-243 care Paper Trade Journal. M-18

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ATTENTION TOP EXECUTIVES—

I offer the know-how acquired in over 25 years sales and administrative experience in the Paper Industry. Especially qualified to assist with Procurement and Customer Relations. Widely known to Paper and Pulp Manufacturers, Converters, Distributors, Publishers and Printers. Member TAPPI & SAPI. Familiar with practically all segments of the industry. Lets discuss without obligation my potential contribution to your organization.—Ed Sullivan, 134 Harmon Drive, Larchmont, N. Y., Tel. 2-5181.
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PLANT ENGINEER—12 years diversified experience designing, developing and building Converting Machinery. Redesign old equipment for maximum production. Tissue, Book, Envelope and Specialties. Supervise Plant Maintenance and production. Age 35. Address Box 51-238 care Paper Trade Journal. M-11

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FOR SALE

1—Variable Speed Terry Turbine—180 H. P., 125# Steam Pressure, 15# Exhaust Pressure.
Direct connected to line shaft on 8 cylinder Board machine, speed from 30 ft. per minute to 250 ft. per minute.
Available in August. Can be seen in operation.
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Motor driven stack directly connected by Waldron flexible coupling with herringbone gear reduction drive & Kohler system electric heating.
9 roll stack (Holyoke) 60" wide.
1 bottom steel roll 19" dia. with 10" journal.
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2 cotton rolls—14" dia.
1 paper roll—14" dia.
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Water cooled bearings.
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100" trim Fourdrinier Paper Machine, suitable for producing .09 corrugated stock.
A-1 condition. Prompt delivery.
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FOR SALE
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2-pair good heavy Black-Clawson Main Presses complete with bottom frames, swing arm housings, R. C. felt rolls, stretchers, etc. Rub. Cov. Bottom Rolls 24" dia. x 126" face. Brass top rolls 24" dia. x 128" face.

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Middletown, Ohio
M-10

FOR SALE—65" Seybold Paper Cutter; 36" Slitter & Rewinder, 48" Sheeter with Layboy; 30" Waldron 6-color Wall Paper Printing Press; 29 x 40 Thomson Platen Die Cutter; 6' Brightwood Box Machine. Address Box 51-217 care Paper Trade Journal. TF

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FOR SALE
NORDBERG STEAM ENGINE

1650 h.p., 32" Bore, 40" Stroke.

Built for 225 lbs. steam pressure, 1000 Super Heat, 40 lbs. back pressure, 150 R.P.M.

In good condition.

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FOR SALE

36" Rock Sheeter, jogger delivery only.
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66" Oswego mill type Power Cutter.
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NEW Wolverine "Cub" Sheeters 15" and 30" width.
NEW "Famous" Balers, both hand and power.

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Paper Machines, Pulp and Paper Mill Machinery and Converting Equipment.

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1—Downingtown 1000 lb. Iron Tub. New roll 48" face x 42" diameter.

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67 feet 8" 13 ply Goodyear Rubber Belting.
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40 Chilled Iron Rolls—Assorted sizes.

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1—3 roll—42".
1—3 roll—42". All rolls bored for steam.
1—Lobdell 6 roll 124" Calender Stack, with platers and drives.
1—Farrel Birmingham 110" Calender Stack with doctors. 2 rolls bored for steam.

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1—175 ft. long x 20" wide—with motor.

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1—Cameron with 2" x 1½" mandrels.

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1—154" face x 80" diameter, with stainless steel shells.

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1—Falk right angle 75 hp.—ratio 6.51-1.
1—Falk straight 100 hp.—ratio 1.67-1.
1—Falk straight 150 hp.—ratio 5.13-1.

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2—124" face x 48" diameter.
1—80" face x 52" diameter.
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1—130" face x 10" diameter—Baby Dryer.
25—120" face x 42" diameter.
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1—144" face x 60" diameter, with bearings.
1—100" face x 48" diameter—with gears and drive.
3—110" face x 42" diameter with bearings and gears.
1—112" face x 48" diameter.
1—100" face x 42" diameter Creping Dryer.
1—52" face x 36" diameter, with frames, gears and bearings.
10—60" face x 48" diameter, with gears, bearings and steam joints.

EXTRACTOR ROLLS
1—Downingtown Extractor Roll 100" face x 24" diameter. Anti friction bearings.
1—Downingtown Extractor Roll 128" face x 24" diameter. Anti friction bearings.

FILTER PRESS
1—New Quarry filter press, size 12, type 41.

FILTERS
2—Oliver Vacuum Filters. Cylinder 10' face x 5'6" diameter. Steel vat. 1500 GPM capacity.

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3—6 plate Sandy Hill Roller Shoe with scrapers.
1—Harmon 12 plate.
1—Sandy Hill 12 plate roller shoe.
1—Bagley & Sewall 8 plate, with scrapers and plates.

JORDANS
1—20 Misnal, for motor drive.
1—Jones Majestic with base and couplings—
1—72 Jones with base and couplings.
1—Jones Majestic, Stainless Steel Fitting.

MOTORS
1—Allis Chalmers 30 h.p. 440 v. 880 r.p.m.
1—Allis Chalmers 30 h.p. 440 v. 880 r.p.m.
25 others 440 v. motors from 2 h.p. to 15 h.p.

PASTE LINING MACHINE
1—Downingtown 52", with 4 Dryers 60" diameter.

PULP EQUIPMENT
1—Wm. S. Merrill 5'17 Pulpwood shipper.
1—Bird ball bearing Pulp Screen. Practically new. Used 6 months.
4—AP&W Ball Bearing Pulp Screens—30 ton capacity.

PULPERS
2—52 Lamson.

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64—Quantity of Pumps, open & closed impellers. Direct connected or Belt Driven. Extended lines for water. Assorted capacities and heads. Most used less than one year. Also new Gravity Pumps.

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1—Link Belt 40 h.p. Ratio 2.3-1, 500 r.p.m.-217 r.p.m.

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22—Press rolls, brass and rubber covered.
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4—72A Bird, fully rebuilt with new vats, plates, etc.—Enclosed drive.
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3—Oliver, Vacuum type, cylinder 120" face x 60" diameter, with steel vat.

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1—Valley Voith Screw Press Size 2.

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1—48" Kidder Spot Sheeter.
1—44" Duplex Dillon with 15 roll Back Stand.

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1—Broughton Oscillating Showers for 110" machine.

SHREDDERS
1—American 27" Hammermill, anti-friction bearing.

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1—Kidder 120" Paper Machine Slitter and Winder —32" rewind.
1—Moore & White 120" Four Drum Paper Machine Slitter and Winder—32" rewind.
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1—De Laval 250 h.p. initial pressure 140 p.s.i. Exhaust pressure 35 p.s.i. Complete with gear reducer.
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3—Beloit 10 x 20 Triplex with silent Link Belt Chain Drives.
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3—Merritt Stock Regulators.

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1—Valley Micrometal Unit for water finish on paper—120" double.

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7—Nash H-5 Vacuum Pumps

WHY LIST YOUR EQUIPMENT? — WE WILL BUY IT.

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1—62"—10-10.
1—62" Universal Type 6.
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1—32" Type 40-2A.
1—42" Type 40-1-A.F.

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1—50" Kidder Score Cut.
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1—30" and 1—40" Langston Type A Shear Cut Slitters and Rewinders.
1—42" Langston Center Wind Duplex Shear Cut Slitter and Rewinder.
1—96" Fales, Model B.

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9—Seybold; 38", 34" and 64" 20th Century, 40", 50" and 74" 102, 40" 62, 34" and 34" Holyoke.
3—Oswegos; 38", 44" and 37"; 1—Sheridan, 50"; 1—Dexter, 57"; 2—Acme, 32" and 42"; 1—S&W Under Cut 63".

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1—64" Creping machine, complete with automatic Kohler system.
Several Die Presses, Seybold and Sheridan, various sizes.
1—Hudson-Sharp #4 special Tissue Paper Folder.
Schultz Automatic Wax paper cutter box roll machine Type AX-100, rewinds rolls up to 125" in length 12" in width.
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1—Modern Clipper Bag Machine for cellophane and pliofilm materials. Makes flat or gusset bags, single or duplex, range 1½" to 9" in width, 5" to 27" in length.
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1—New 24"—2 color, Roll to Roll-Aniline Press.
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1—38" Holyoke Roll to Roll Embosser, Heavy Type. Two extra new rolls, one steel and one paper.
1—48" Norwood Plater, AC Reversing Motor Equipment.
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1—#1-A Bird Screen, bronze plates .020 cut.
1—130" Hamblet Duplex Rotary Sheet Cutter, with Moore & White Layboy and six roll backstands.
1—72" Hamblet Duplex Rotary Sheet Cutter, slitting attachment, 8 roll backstands, Moore & White Layboy, 15 HP Reliance Drive.
1—55" nine roll Holyoke Super Calender stack with A.C. motor equipment.
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1—100" trim, Bagley & Sewall Fourdrinier Paper Machine, suitable for light weight paper and newsprint.
1—96" Trim, Fourdrinier Paper Machine, suitable for producing .008 corrugating paper.

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FOR SALE—4 cyl. board machine, 4 primary, 3 main presses; 48 dryers; 2 cal. stacks; duplex cutter; suitable for manufacture of board or paper usually made on cylinder machines. Address Box 51-219 care Paper Trade Journal. M-10

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Serviceable Grocery Bag Machine
8 through 20 lb. sizes.
Recent Model Potdevin preferred.

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Mayer Equalizer Coating Machine, 40", 48", 60" or 72" in width. Urgent. Address Box #51-244 care Paper Trade Journal.

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WANTED—For foreign use—Cylinder Paper Board Machine 84" trim or better. 30 to 60 tons production and auxiliary equipment. Advise if in operation or assembled for inspection. Address Box 51-204 care Paper Trade Journal. TF

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-89 care Paper Trade Journal. TF

WANTED—Brightwood Box Machine, Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-88 care Paper Trade Journal. TF

WANTED—66" width 5-drum revolving reel. Rochester Paper Company, Rochester, Michigan. M-11

WANTED—3 Good complete Cameron Winders 42" to 84". Principals only. Address Box 51-227 care Paper Trade Journal. M-25

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WANTED—Schopper or M. I. T. Fold Endurance Tester, power driven, with attachments. Also interested in several Vortraps, surplus or used. Address Box 51-240 care Paper Trade Journal. M-11

WANTED—20 Dryers, Pope Type Reel, 5 or 7 roll calender stack complete, and good rewinder to wind 50" diameter rolls for machine trimming 72". Address Jay Pulp & Paper Corporation, Stevens Point, Wisconsin. M-25

WANTED

WANTED

Paper Mill in the East. Please give particulars. Address Box 51-242 care Paper Trade Journal.

M-38

WANTED TO PURCHASE large or small Sulphate Pulp Mill, anywhere east of Rockies in U. S. or Canada.

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WANTED—Paper Sheeter, 31 inches or over, with or without stands; Duplex preferred. Also, Jordan, 75 h.p. to 100 h.p. Address Box 51-236 care Paper Trade Journal. M-25

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PROPOSALS FOR THE SALE OF REFUSE WOOD AND SCRAP METALS, AND THE REMOVAL OF DEBRIS AND SAWDUST.

U. S. GOVERNMENT PRINTING OFFICE,
WASHINGTON, D. C., *April 30, 1951.*

Sealed proposals will be received at this Office until 2 o'clock p. m., May 16, 1951, for the disposal and sale of Refuse Wood, Sawdust, and Scrap Metals which may accumulate, and for the removal of debris from the Government Printing Office during the fiscal year beginning July 1, 1951. The right to reject any and all bids and to waive defects is reserved. Detailed specifications of the estimated quantities to be sold, accompanied by blank proposals and giving regulations with which bidders must comply, may be obtained by addressing—

JOHN J. DEVINY,
Public Printer.

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CAPITAL TO INVEST—Interest in Folding Box Business, paper or kindred field. Active participation. 25 years experience in sales production folding boxes. Address Box 51-232 care Paper Trade Journal. M-18

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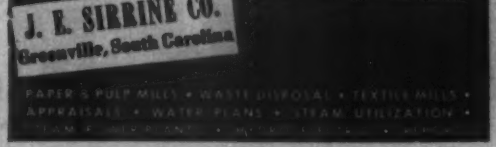
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D. J. Murray Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.
Shartle Brothers Machine Co

ADJUSTABLE SHAKE MOTION
Manchester Machine Co.

ADJUSTABLE TILTING MOTOR BASE
Lovejoy Flexible Coupling Co

ALLOYS
Michigan Steel Casting Co

ANTIFOAM
American Cyanamid Company Industrial Chemicals Division
National Aluminate Corp.
Nopco Chemical Co.

APRON CLOTH
Williams-Gray Co.

BAG MACHINES
Dilts Machine Works
Potdevin Machine Co.

BED PLATES
Baker Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BELTING
Allis-Chalmers Mfg. Co.
Goodrich, B. F., Co.
The Goodyear Tire & Rubber Company
Link Belt Company

BIN DISCHARGERS
Hoeft Company, Inc.
Stephens-Adamson Mfg. Co.

BLEACHING AGENTS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

BLEACHING APPARATUS
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co

BLOW PIPES & PITS
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BOILERS
Babcock & Wilcox Co.
Combustion Engineering-Superheater, Inc.

BOTTOMS
Kalamazoo Tank & Silo Co
Valley Iron Works Co.

BOXBOARD SCALES
Thwing-Albert Instrument Co

BRUSH ROLLS
H. W. Jenkins Sons, Inc.

BRUSHES
H. W. Jenkins Sons, Inc
Gus Riddel & Son
The Sandy Hill Iron & Brass Works

Smith Winchester Mfg. Co.
Weber, Herman G., & Co., Inc.

BALL MILLS
F. L. Smidth & Co.

BARK BURNER
Combustion Engineering-Superheater, Inc.
Hoeft Company, Inc.
Nichols Engrg. & Research Corp.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co
Valley Iron Works Co.

BASIC WEIGHT SCALES
Thwing-Albert Instrument Co

BEARINGS
The Bagley & Sewall Company
Black Clawson Company
E. D Jones & Sons Co
Magnus Metal Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
SKF Industries
Stephens-Adamson Mfg. Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

BEATERS AND JORDANS
American Paper Machy. & Engrg. Works, Inc.
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Smith & Winchester Mfg. Co
Valley Iron Works Co.

BURSTING TESTERS
B. F. Perkins & Son, Inc.
Testing Machines, Inc.

CALENDERS
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell United Co.
Edward J. McBride
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co
Valley Iron Works Co.
Waldron Corp., John

CARRIER ROPE
Williams-Gray Co

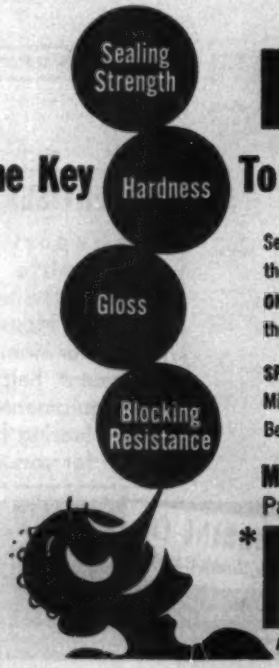
CASEIN
American Cyanamid Co Industrial Chem. Div.
Bunge Pulp & Paper Co
Hercules Powder Co.

CASTINGS
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblett Machine Co.
Lobdell United Co.
Magnus Metal Corp.
Michigan Steel Casting Co
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Smith & Winchester Mfg Co
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrs. Co.
Shartle Brothers Machine Co.

CHAINS
Stephens-Adamson Mfg. Co.

CHEMICAL COTTON PULP
Hercules Powder Co.



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Columbia, Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
B. F. Goodrich Chemical Co.
Gulbransen & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Naugatuck Chemical Division of U. S. Rubber Co.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Reichhold Chemicals, Inc.
Solvay Sales Corp.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

CHESTS
The Bagley & Sewall Company
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

CLEANING MATERIALS
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.

COATING MACHINERY
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co., Inc.
Moore & White Co.
Pusdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS
American Cyanamid Company, Industrial Chemicals Division
E. I. Du Pont De Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Pfaudler Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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COMPLETE FOURDRINIER ROLL GRINDING
Manchester Machine Co.

COMPRESSORS
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Nash Engineering Co.
Roots-Connersville Blower Corp.

CONDENSATE FILTERS
Hungerford & Terry, Inc.
The Permutit Company

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Askania Regulator Co.
Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

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Dilts Machine Works
Ebasco Services
Frank W. Egan & Co.
Alvin E. Johnson & Co., Inc.
Mahr, Inc., Chas. T.
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
Frank C. Vaughan
John Waldron Corp.
H. G. Weber & Co., Inc.

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The Brown Instrument Co.

CONTROLS
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Johnson Co.
Foxboro Control Co.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

CONVERTING MACHINERY
The Bagley & Sewall Company
Egan, Frank W., & Co.
John Waldron Corp.
Dilts Machine Works

CONVEYORS
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Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.
Stephens-Adamson Mfg. Co.

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Smith & Winchester Mfg. Co.
Sonoco Products Co.

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Railway Supply & Mfg. Co.

COTTON PULP
Alpha Cellulose Corp.

COUCH ROLLS
Beloit Iron Works

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The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lovejoy Flexible Coupling Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

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Cleveland Crane & Engrg. Co
Whiting Corp.

CURL TESTER
Thwing-Albert Instrument Co.

CUTTERS
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Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Harris-Seybold Co.
Jagenberg-Werke Akt. Ges.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Sandy Hill Iron & Brass Works
Taylor, Stiles & Co.
The Smith & Winchester Mfg. Co.

CYLINDER MOULDS
Manchester Machine Co.

CYLINDERS
M. W. Jenkins Sons, Inc.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DOCTLE WEBBING
Williams-Gray Co.

DEFIBRATORS
American Defibrator Co.

DE-INKING
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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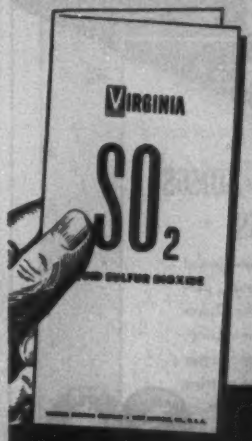

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General Dyestuff Corp.
Hooker Chemical Co.
Nopco Chemical Co.

DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.
The Permutit Company

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
Bunge Pulp & Paper Co.
W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
American Cyanamid Company, Industrial Chemicals Division
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTERS
Babcock & Wilcox Co.
Blaw Knox Company
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Lukenweld
Paper & Industrial Appliances
Pusey & Jones Corp.

DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
The Bagley & Sewall Company
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell United Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
The Bagley & Sewall Company
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DRIERS
The Bagley & Sewall Company
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Reel-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRUM WINDERS
Manchester Machine Co.

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co.

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Sons Co.
Monro & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company, Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

EMBOSSING ROLLS
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Gibbs-Brower Company, Inc.
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Rail Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.

EVAPORATORS
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Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Hoeft Company, Inc.
Merrick Scale Mfg. Co.
The Permutit Company
Stephens-Adamson Mfg. Co.

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Merry Paper Mill Supply Co.
Sinker & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

FELT CLEANERS
Calgon, Inc.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Gilbert & Nash Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
L. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
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Crane Company
Shartle Bros. Mch. Co.
Walworth Company

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Lovejoy Flexible Coupling Co.
John Waldron Corp.

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Norton Co.

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The Sandy Hill Iron & Brass Works

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Elwell Parker Elec. Co.
Towmotor Corp.

FORMATION TESTERS
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Williams Apparatus Co., Inc.

FOURDRINIERS
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.
Williams Apparatus Co.

FURNACES
Hoeft Company, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRAPPLES
Blaw-Knox Company

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell United Co.
Norton Company
Samuel C. Moore and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company

GUIDES
The Bagley & Sewall Company
Kaus, Frank W., & Co.
Gilbert & Nash Co.
The Moore & White Co.
Mount Hope Machinery Co.
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works
Kaus, Frank W., & Co.
The Sandy Hill Iron & Brass Works

GUMS
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Stein-Hall Co., Inc.

HEAT EXCHANGERS AND RECOVERY SYSTEMS
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Westinghouse Electric Corp.

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E. D. Jones & Sons Co.
General Electric Co.
D. J. Murray Mfg. Co.
Rez-Ray Mfg. Co., Inc.
Ross Engineering Corp., L. O.
Sickle Steam Specialties Co.
Valley Iron Works Co.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Alrivis Division, Heyden Chemical Corp.
Mopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL TRACTORS
Clark Equipment Company, Industrial Truck Division
Tournotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

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Bunge Pulp & Paper Co.
Cambridge Instrument Co.
General Electric Company
W. & L. E. Gurley
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co
Williams Apparatus Co.

JOINTS
The Bagley & Sewall Company
Beloit Iron Works
Johnson Corp.
Lovejoy Flexible Coupling Co.
Shartle Bros. Mch. Co.

JORDAN FILLINGS
Appleton Machine Co.
Baur Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co
Valley Iron Works Co.

KNIVES
Black Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Hepenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Simons Worden White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

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Baur Brothers Co.
Bird Machine Company
Dilts Machine Works
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Kaus, Frank W., & Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

LAMINATING MACHINES
The Bagley & Sewall Company
Dilts Machine Works
Kaus, Frank W., & Co.
John Waldron Corp.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

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Alpha Cellulose Corp.

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In front of this store,
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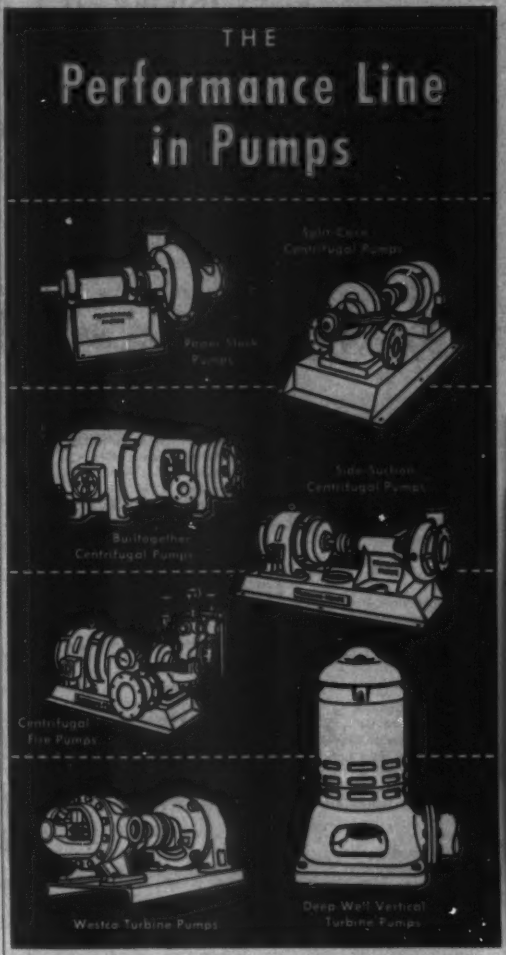

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du Pont, E. I., de Nemours & Co. Polychemicals Dept. — —
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N

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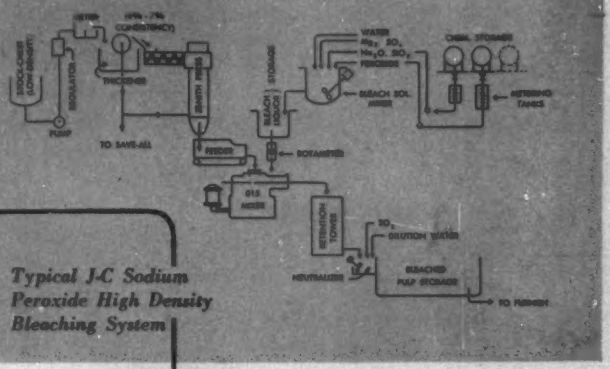

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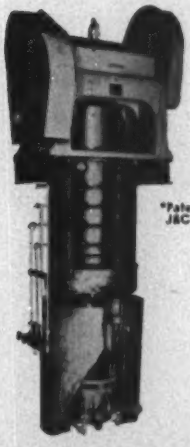

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